ALTERNATIVE FUEL SYSTEMS

Prins

General manual
Part 1/2

6-2020

Table of contents

Required equipment / tools / materials for installing a complete system

- Complete workshop toolbox (wrenches, screwdrivers, cutters, pliers, ratchet, sockets)
- Car lift
- Portable computer with Prins diagnostic software
- Vehicle fuel system scan tool or OBD scan tool Prins (part nr. 099/99928)
- Exhaust gas analyser
- Multimeter
- Oscilloscope
- Prins diagnostic software
- Prins serial interface
- Torque wrench (5-50Nm)
- Portable light
- Assortment drill bits 4 to 12 mm
- Portable drill or pneumatic drill
- Thread cutting device (male M6x1, M8x1, M10x1)
- Air gun
- Vacuum cleaner
- Safety goggles
- Hot air gun
- Soldering iron, soldering tin
- Wire-stripping pliers
- Adhesive tape
- Adhesive sealant
- Thread locking compound
- Anti-corrosion agent / black body coating
- Gas leak detection device or foam leak spray
- Shrink sleeves

Vehicle check

- Check the vehicle drivability on petrol
- Check the fuel system for error codes (scan tool)
- Check if the catalytic converter is in good condition (exhaust LPG analyzer)
- Check the condition of the ignition system (spark plugs, cables, coil)

General instructions

- The installation of the system shall be done in accordance with the installation manual provided by Prins Autogassystemen.
- This manual is based on Dutch regulations, always install the system in accordance to the local regulations.
- For an optimal functioning of the VSI system, maintain a clean and organized work environment during installation and maintenance to prevent pollution of the VSI components.
- Always use this manual for instructions and diagrams next to the dedicated installation manual.
- Always disconnect the battery when installing the lpg system. Make sure the ignition key is outside the car. Be aware of central door locking, radio / telephone memory code and alarm system.
- Wear safety goggles when working on petrol filled system / connections (pressurized petrol)
- Do not place the main fuse into the fuse holder before having completed the installation of the system.
- The AFC has to be activated by means of the Prins diagnosis software.
- Never disconnect the AFC connector, unless you have removed the main fuse.
- When installing the wiring harness, ensure that it does not run near any of the ignition components.
- Solder and insulate all electrical connections.
  The wires in the loom are provided with numbers and text. The text on the wire explains the function of the wire. The wire harness is not model specific, therefore it may be necessary to adjust the length of the wires. Ensure maximum care is taken when connecting wiring.
  Make professional joints using solder and shrink sleeve with glue. Do not stretch the wiring harness.
- No component of the VSI system shall be located within 100 mm of the exhaust or similar heat source, unless such components are adequately shielded against heat.
- If holes have to be drilled (wear safety glasses) for installing brackets, etc., the drilled holes must always be treated with an anti-corrosion agent, after the chips have been removed (especially when mounting a exterior filler into body work).
- After having completed the installation, check the whole system for lpg leakage; use a lpg leak detection device. Also check for leak of engine coolant, petrol and air.
- Fitting and maintenance is only allowed by Prins Autogassystemen selected LPG engineers.
- Failure to follow the instructions in this manual can result in a poor or non-working lpg installation or a dangerous situation.
- For maintenance instructions and filter registration see owner manual.
- Prins Autogassystemen is not responsible for any damages to people or objects as a result of changes to Prins products.
- Check our website regularly for diagrams, certificates, updates, info-bulletins and product information.
- Register (warranty card) the system on the Prins warranty portal .

Work extremely clean!!

Tightening moments

Bolt	8.8 Torque (Nm)	Spanner Size
M 4 x 0,7	3.3	7
M 5 x 0,8	6.5	8
M 6 x 1,0	11.3	10
M 7 x 1,0	14.5	11
M8 x 1	24.5	12-13
M8 x 1.25	27.3	12-13
M10 x 1	52	15-16-17
M10 x 1.5	54	15-16-17
Supply line reducer lock-off	15	13
Supply line tank lock-off	15	16
Filler hose connection	50	22
Injector rail nut	3	13
Inlet manifold coupling	1	3.5 Allen key

Symbol explanation

	Wear safety goggles when working on petrol / gas lines
	Caution ! Important !

VSI components

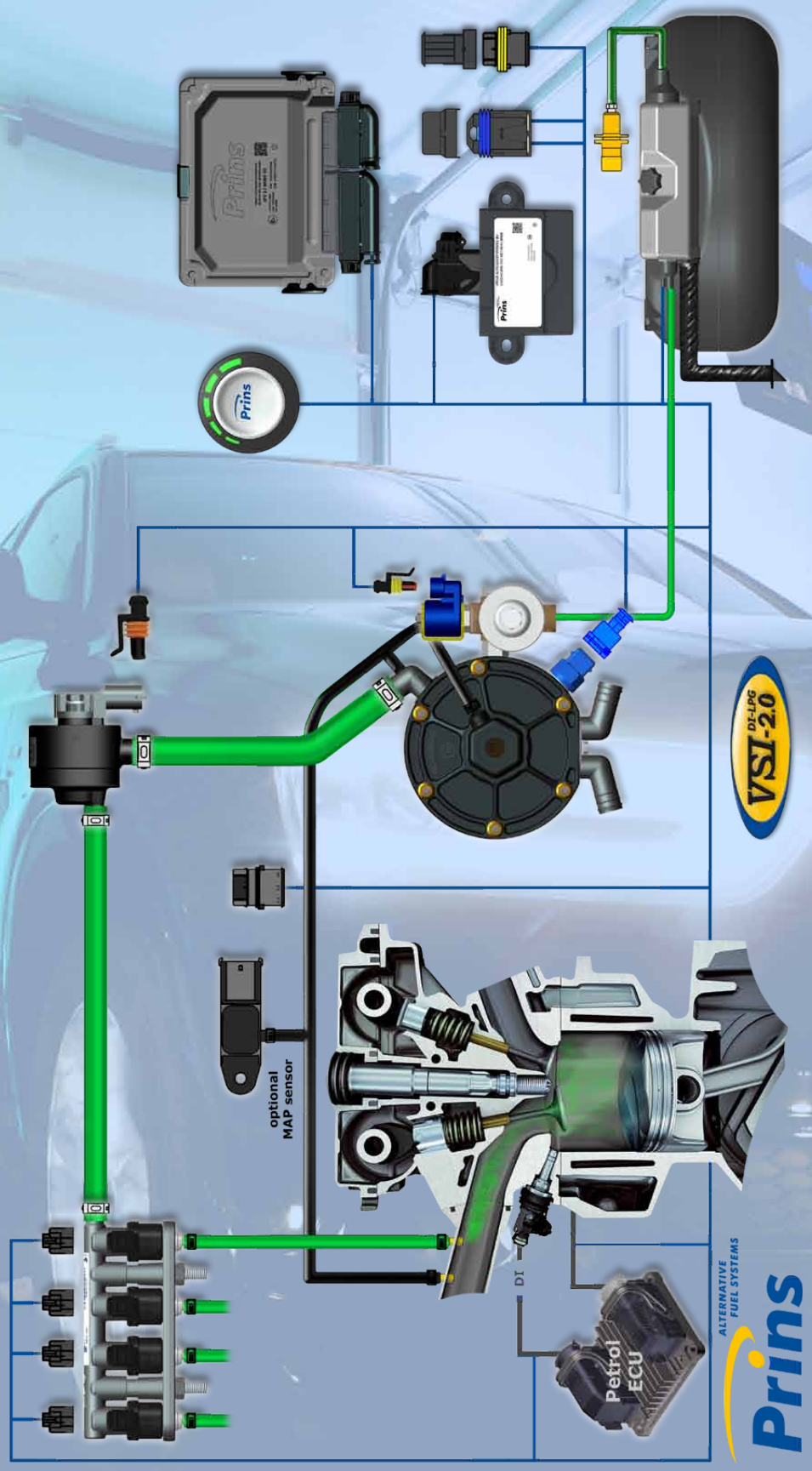
1 ***LPG components***
– Reducer
– Filter unit
– Injector rail
– Fuel line

2 ***Electrical components***
– Alternative Fuel Controller (AFC)
– Injection Module (IM)
– Fuel switch

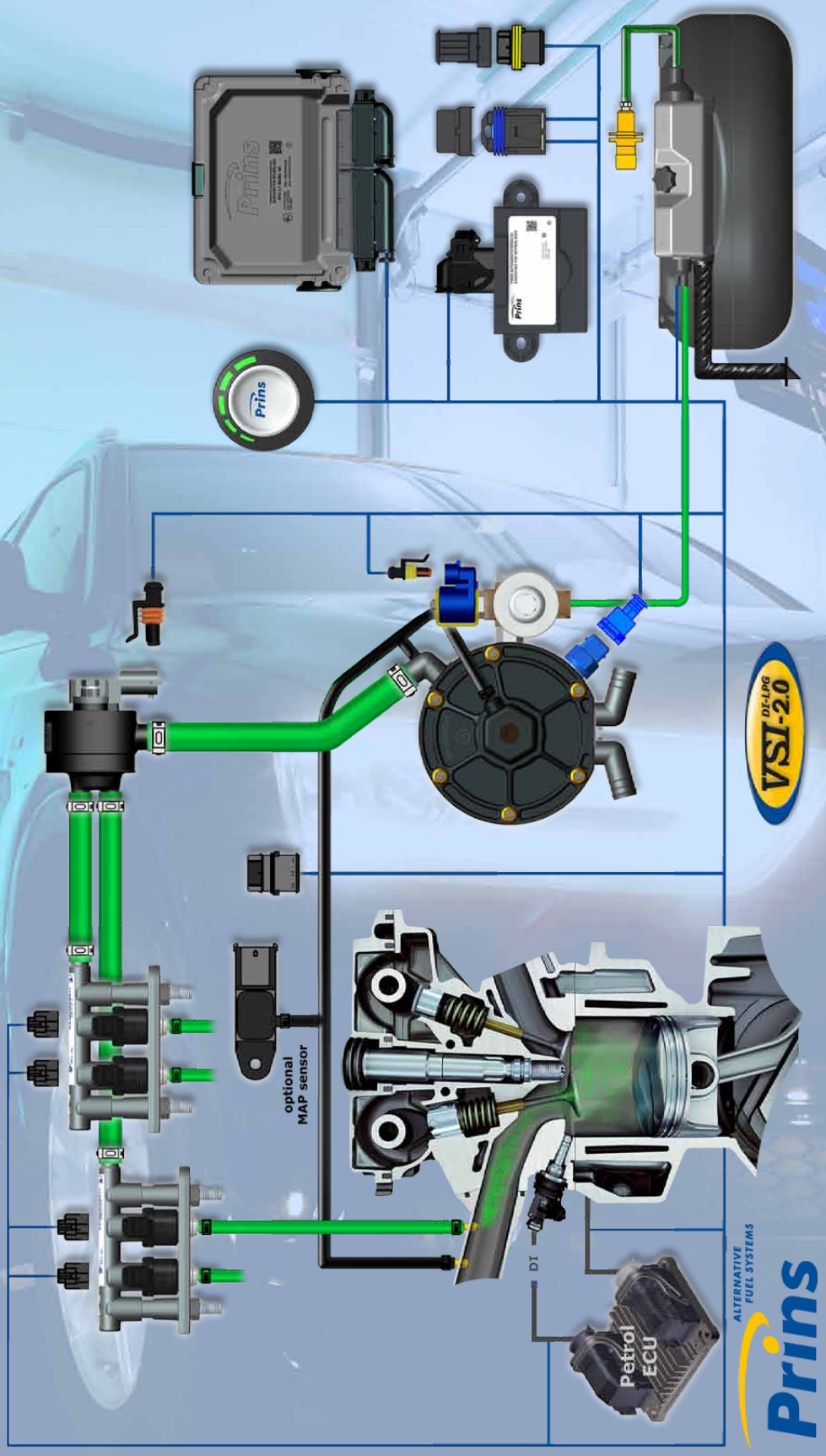
Approval numbers

Component	*Approval number*
Reducer	E4-67R-010054
Lock-off valve	E8-67R-014327 or E4-67R-010041
Filter unit	LPG E4-67R-010096 / CNG E4-110R-000028
Injector rail	LPG E4-67R-010093 / CNG E4-110R-000021
Injector Keihin KN8	LPG E4-67R-010092 / CNG E4-110R-000020
Injector Keihin KN9	LPG E4-67R-010310 / CNG E4-110R-000295
AFC Alternative Fuel Controller	E4-67R-010098 / E4-10R-030507
Fuel lines, XD series	E4-67R-010247

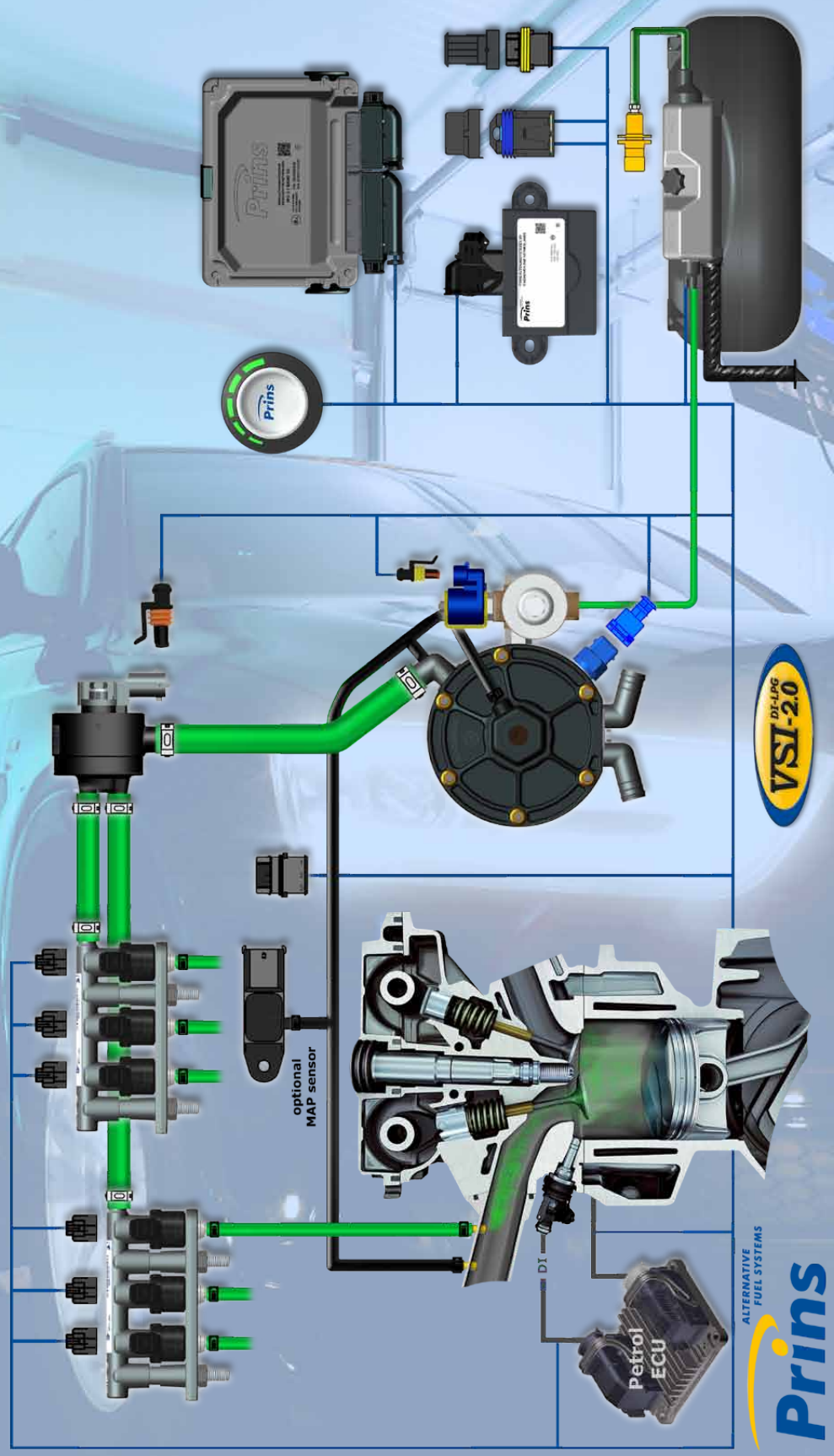
VSI-DI 4-cyl system overview



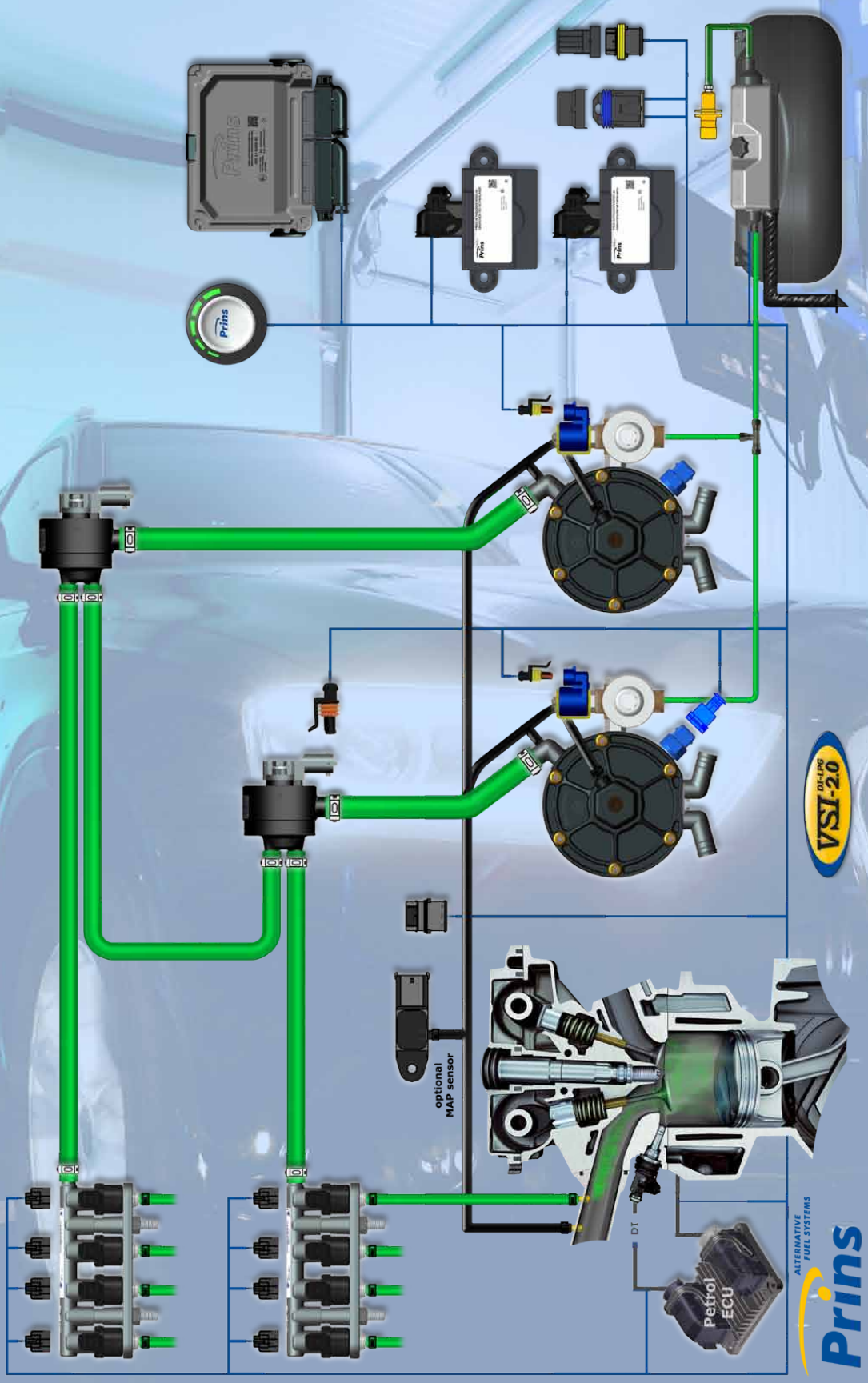
VSI-DI 4-cyl Boxer system overview



VSI-DI 6-cyl system overview



VSI-DI 8-cyl system overview

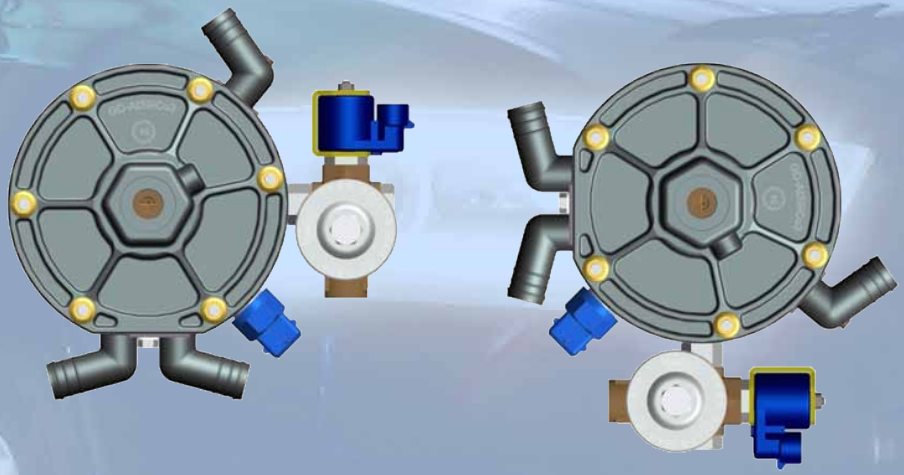


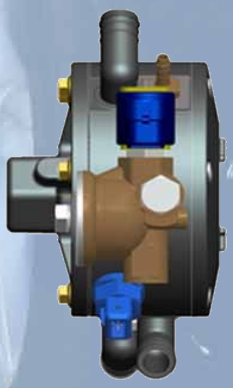
MAP Reducer

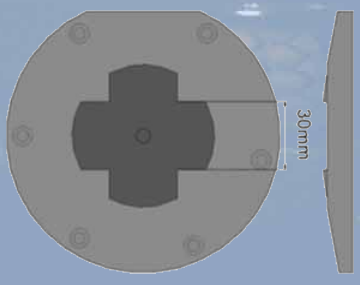
- Big capacity, 28gr/sec (= engines up to 400Hp)
- System pressure control with single stage valve
- Developed for turbo engines/engines with short ti_petrol on idle
- Gas Absolute Pressure= variable (dependent on Manifold Absolute Pressure [turbo pressure])
- Delta Pressure= constant (differential pressure over the injector rail)
- Integrated coolant temperature sensor (NTC, R=2500 ohm at 20 °C)
- Adjustable pressure: 1,7-2,6 Bar
- Pressure relief valve according to R67-01 regulations
- Very stable dynamic pressure behavior
- Rotatable lock-off valve
- Manifold Absolute Pressure connection on front cover

The reducer can be mounted in only two ways:

- With the 16 mm LPG output on top and the water connections downwards (required)
- With the lock-off valve facing downward.

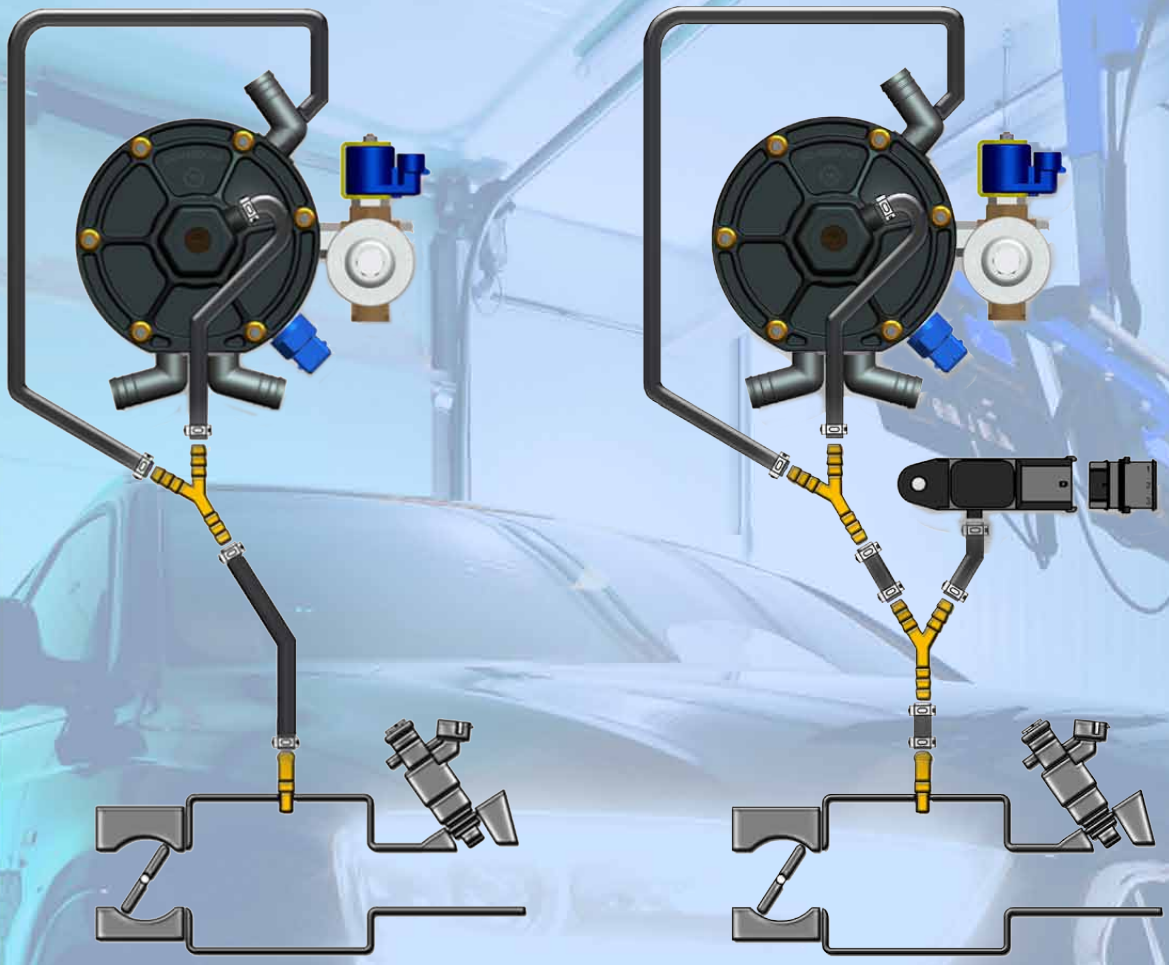






The rear lid contains a cross for a closed connection
One bolt M8 is sufficient for fixation on the frame

MAP Reducer connection



For measuring the inlet manifold pressure (MAP) without OEM sensor.
Connect the 3-pole connector to the Prins MAP sensor.

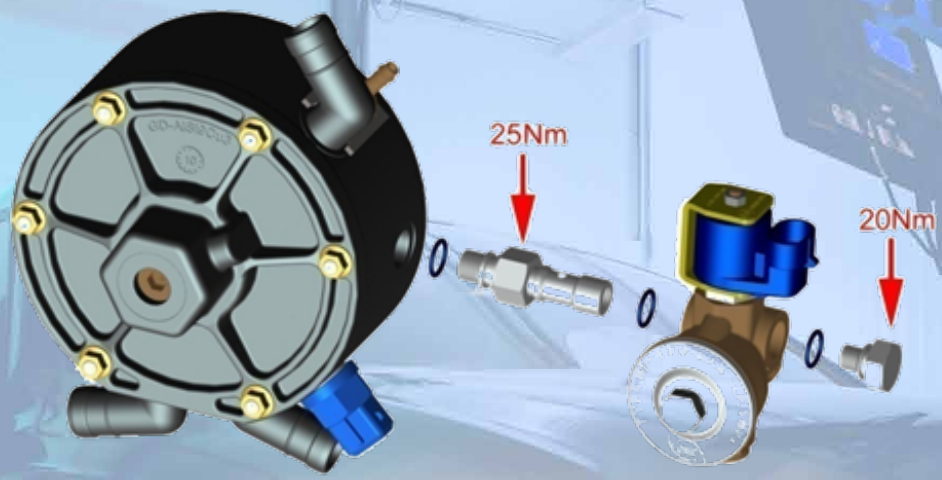
Connector	AFC pin	wire text	colour
1	27	+5V Sensor	Red-blue
2	37	C ground	Brown-black
3	18	AD1	Blue-white

For measuring the inlet manifold pressure (MAP) with OEM sensor.
Cut off the 3-pole connector.
Only connect AD1 to the OEM sensor.

Connector	AFC pin	wire text	colour
1	27	+5V Sensor	Red-blue / insulate
2	37	C ground	Brown-black / insulate
3	18	AD1	Blue-white

Reducer Lock-off valve

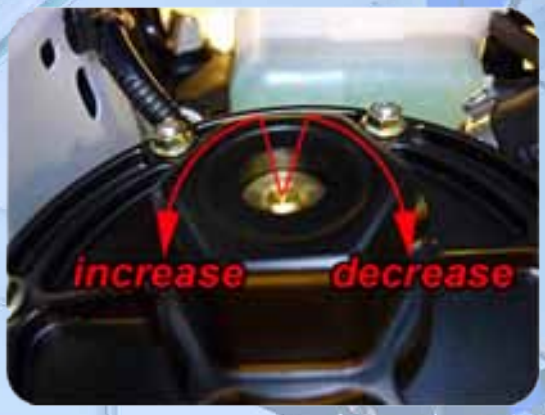
- “Standard” Lock-off valve (6mm)
- “Big Flow Capacity” lock-off valve 8mm (engines >135kW)
- Increased bore from 3.2 to 5.2mm
- Coil is identical to standard lock off valve
- Pilot operated
- Flexible position (180 degrees to rotate)

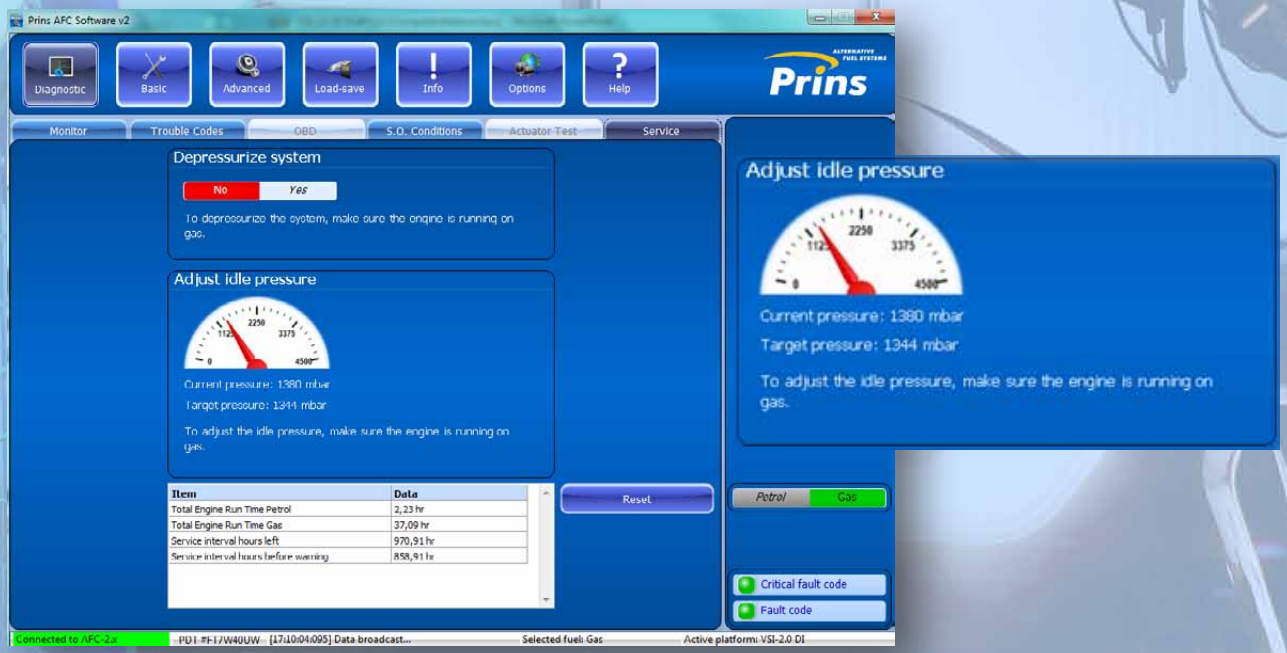


Attention:
relieve system pressure before changing the filter!

MAP Reducer pressure adjustment

Default pressure new reducer = 2,2 bar
After mounting a new reducer always adjust the pressure!
Dedicated :Target pressure setting
Universal: see universal calibration manual

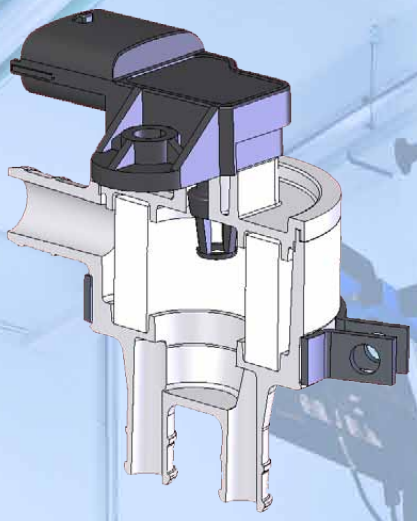




ID	Name	Value	Unit	?
495	Regulator Map Referenced	Yes	-	✓
1653	System Idle Pressure	1216	mbar	✓
195	Tank Empty Pressure	700	mbar	✓

Filter Unit

- Lightweight nylon housing
- Gas temperature / pressure sensor
- Sensor 4 bar LPG or 5.5 bar CNG available
- High pressure resistance [max.25bar]
- Special glass fiber filter material [3µm]
- Max. oil trap 4-5 gram
- Light weight (0,11 kg)
- 16mm gas inlet
- 11mm outlet [single and double outlet versions]
- Filter element replacement:
- First time after 25.000km
- Sub sequential every 75.000km

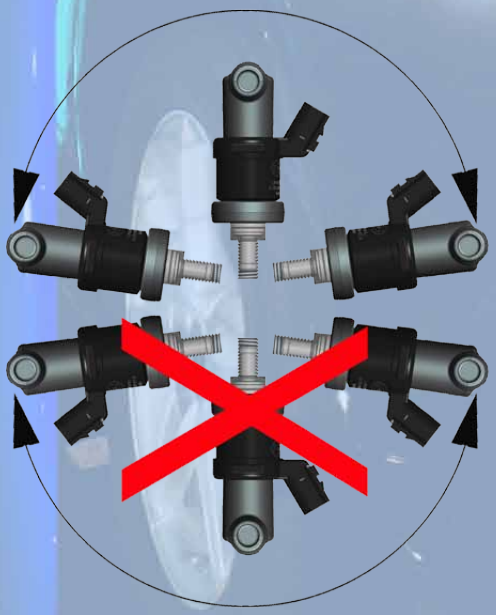


Connector	AFC pin	wire text	colour
1	35	Ground Psys	brown-black
2	14	T-gas	grey
3	9	+5V sensor	red/blue
4	16	Psys	green

Injector Rail KN-9

- Smaller in size
- 15% size reduction 40% weight reduction
- Smaller injector connector
- Improved layout for easier installation
- Higher Linear Flow Rate (LFR) compared to KN-8
- Improved durability/reliability, >300 million cycles guaranteed!
- High chemical resistance
- Homologations: R67-01/ R110/R10

Flow rate var. KN9	HP per cyl. [LPG]	HP per cyl. [CNG]
Model 32cc	<18	<14
Model 43cc	12-20	10-16
Model 52cc	17-27	14-22
Model 63cc	24-36	19-29
Model 73cc	33-47	26-38
Model 82cc NEW!	41-53	33-44



Injector Rail mounting positions

Prins Alternative Fuel Controller, AFC

Operating the following components:

- Reducer / Tank lock-off valve
- Reducer engine coolant temperature (Tect)
- Injector rail
- Filter Unit (gas temperature and pressure)
- Waterproof connector and housing.
- Switch over strategy
- Sensor simulation possibilities
  High pressure sensor signal simulation
  Boost sensor signal simulation
- Diagnosis / safety control
- CAN communication [OBD connector]
  Pin 6 [CAN1 High] yellow wire
  Pin 14 [CAN1 Low] Green wire

Mount the AFC always at an as cold as possible location.

Connector A pin 1-81 ***Connector B pin 82-121***

Prins Injection Module

- Individual interruption and simulation for each petrol DI-injector.
- 4- and 6 cylinder versions available.
- Three variants available [A/B/C].
- Suitable for most direct petrol injectors.
- Cylinder selective switching between gas <->petrol possible.
- Petrol injection signal output for AFC.
- IM temperature monitoring [AD-5 wiring].
- Fast Power-FET based control.
- Waterproof connector and housing.

Mount the Injector Module always at a cold location to prevent error 142 [External IM temperature too high].
Always use right module according to dedicated conversion kit.

Fuel selection switch

Function of the switch:

-Fuel status selection Petrol <> LPG
-Prins logo / fuel status LED:
- ♦ Petrol mode: status LED off
- ♦ LPG mode: status LED on

-Switch over indication:
- ♦ LPG <> Petrol : status LED off/beeper beeps 1x
- ♦ Petrol <> LPG : status LED on/ beeper beeps 2x

-Tank level indication (always on)
- ♦ 5 indication LED's (colour application depending)

-Diagnostic warning
- ♦ Switch back to petrol mode
- ♦ Diagnosis/system check LED illuminates
- ♦ Beeper activated

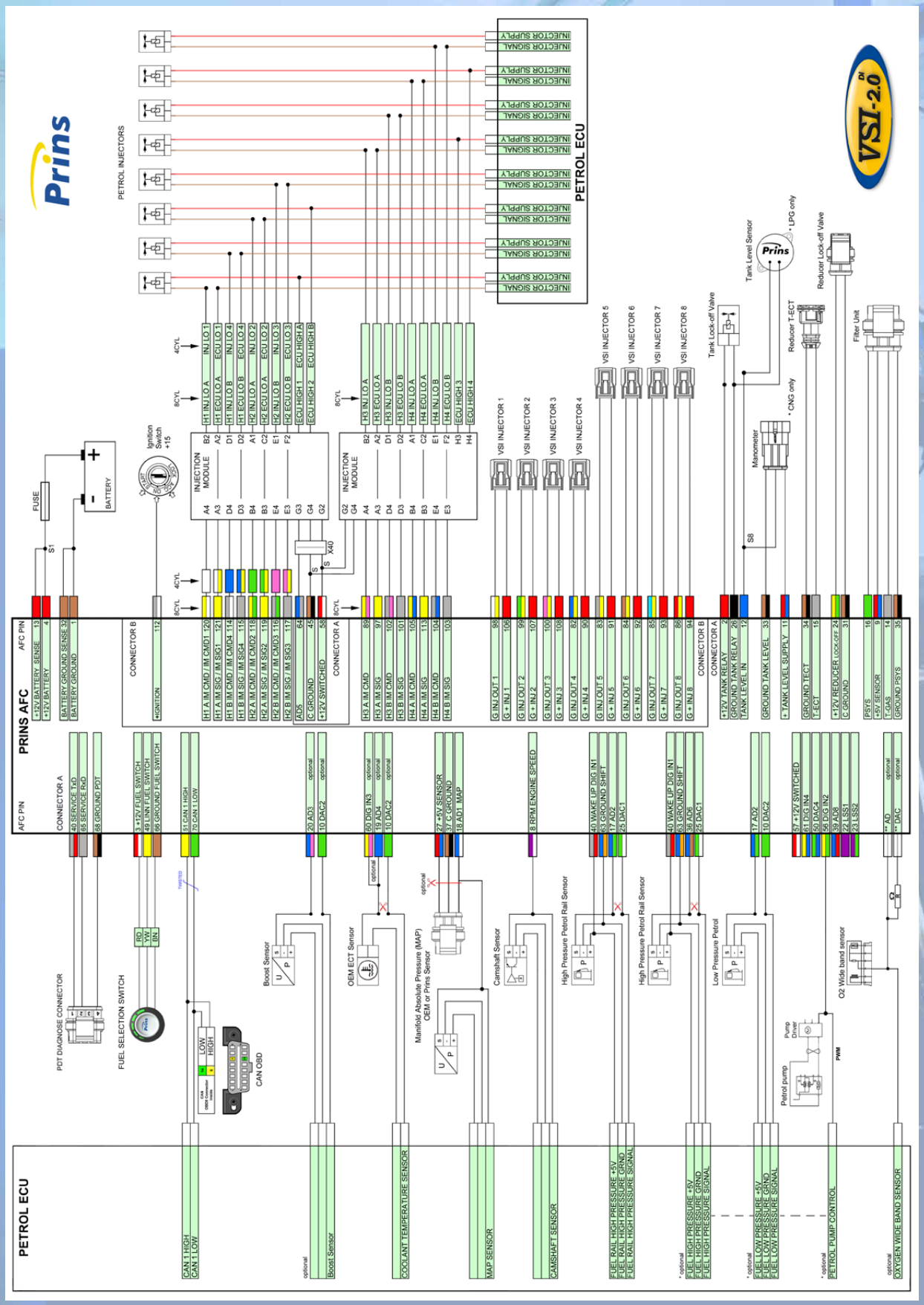
-Diagnostic warning: system limits are reached
- ♦ System switches back to petrol modes
- ♦ Diagnosis / system check LED illuminates orange
- ♦ Prins logo flashes at 1 Hz
- ♦ Beeper activate

By using the selector switch it is possible to switch between LPG and petrol mode.
The fuel status LED indicates the selected fuel. If the Prins logo illuminates then LPG is selected, if the status LED does not illuminate petrol is selected.
By means of the tank indication LED's, the fuel level can be read out.
During low level (LPG tank empty) the system will automatically switch back to petrol mode. A beeping sound in combination with a blinking fuel status LED indicates that the system has switched back to petrol mode.

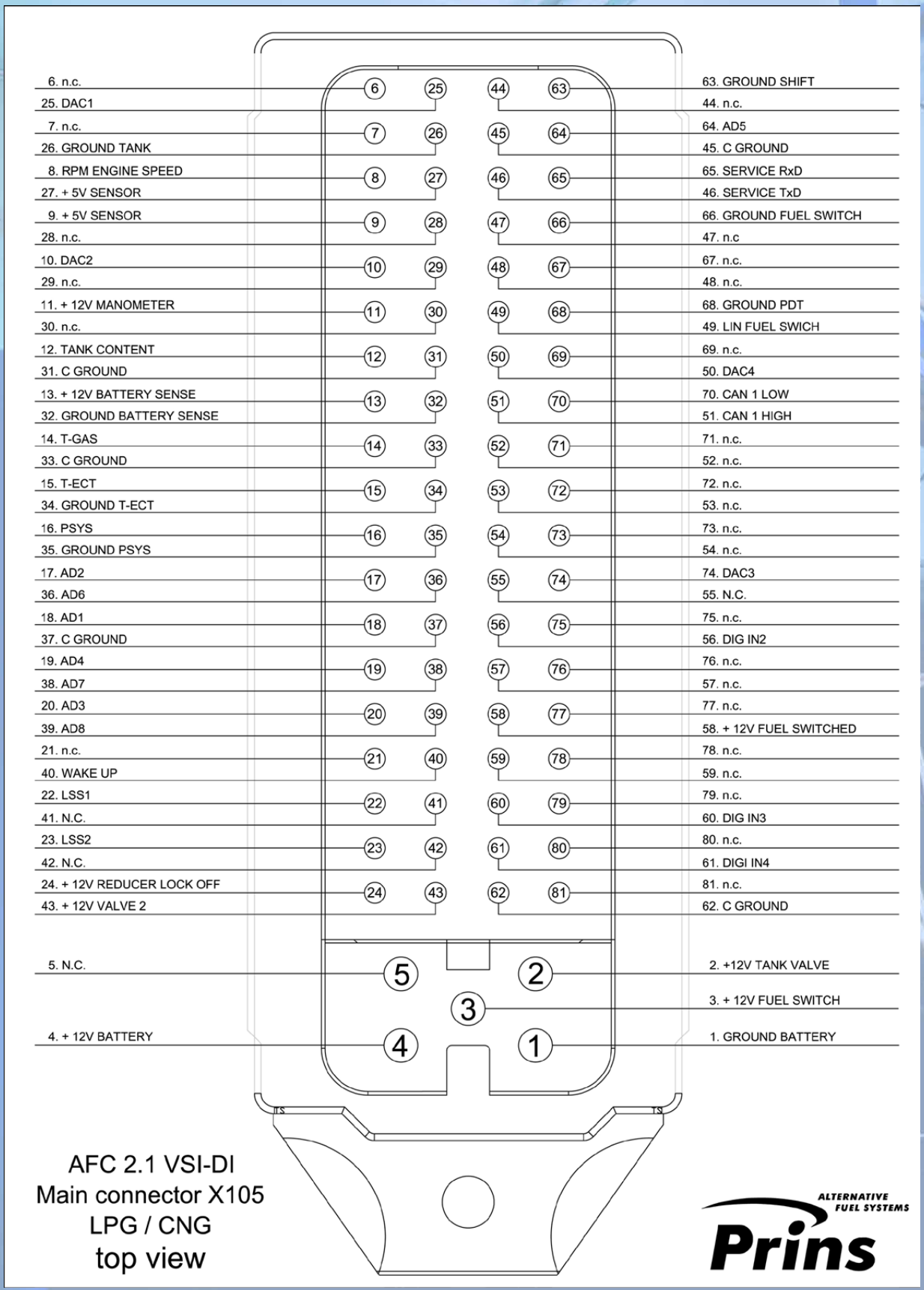
Furthermore, the switch has a diagnostic / system check LED. During the start a system check will be carried out and the LED will illuminate (red).
This LED switches off when there are no system errors detected.
When the system detects a fault the limp home procedure will be started. The system will automatically switch over to petrol mode, the diagnostic LED will illuminate (red), the fuel status LED will blink and the beeper will beep.
The beeping sound and the blinking status LED can be switched off by pressing the switch (switch back to petrol mode).
Extreme temperatures in combination with fuel composition may affect the operation of the LPG system. It is possible that under specific conditions the VSI-DI system operates outside its specified operating conditions. To ensure the reliability of the vehicle under all circumstances the system will switch back to petrol mode, the diagnostic LED will flash (orange), the status LED flashes and the beeper will be activated.
The following conditions can cause this problem:
- Extremely high temperatures

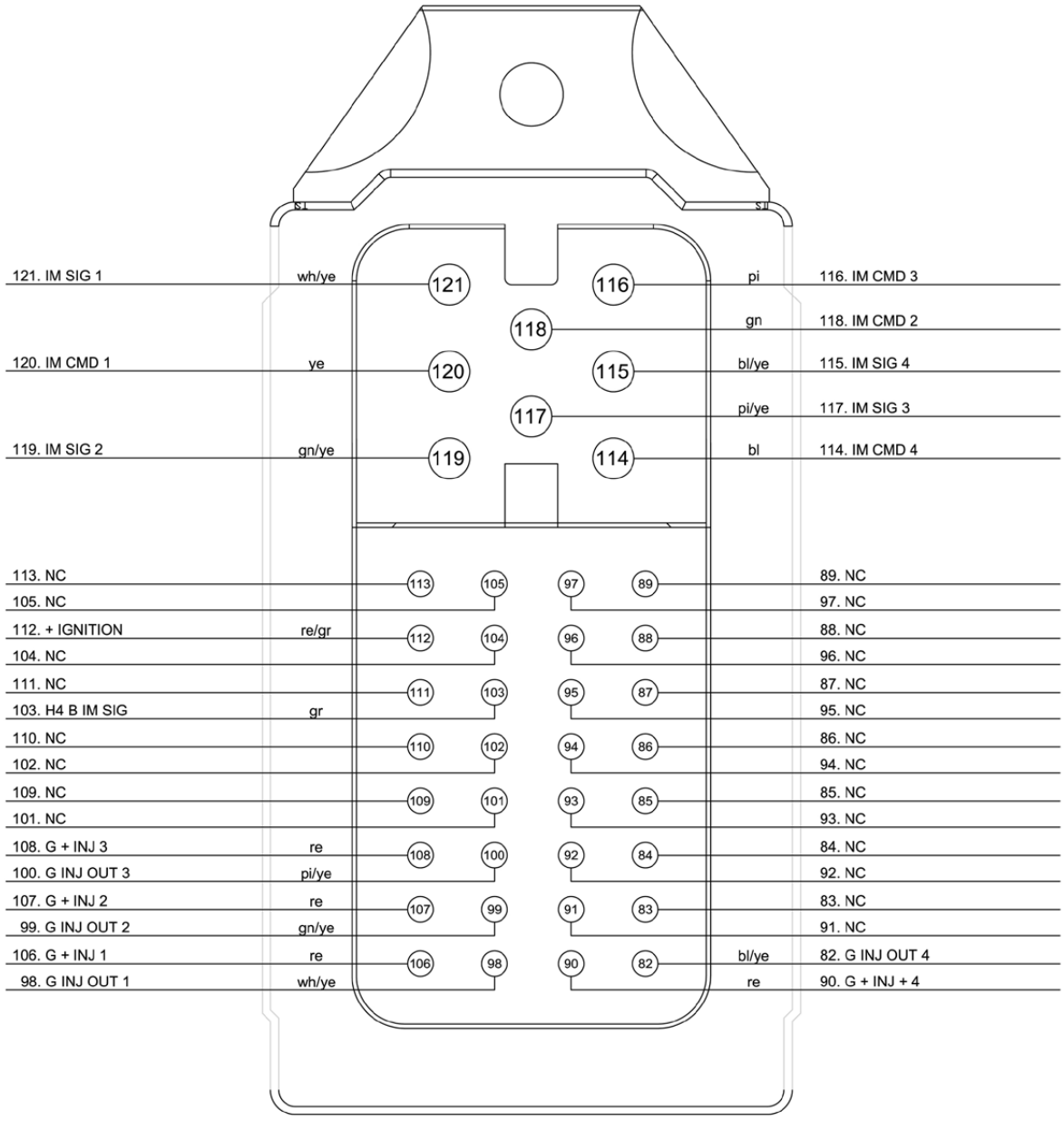
If this error occurs it will not initially be possible to switch back to LPG. In practice, this means that it may take up to one day before it is possible to switch back to LPG.

VSI-DI Basic Wiring Diagram

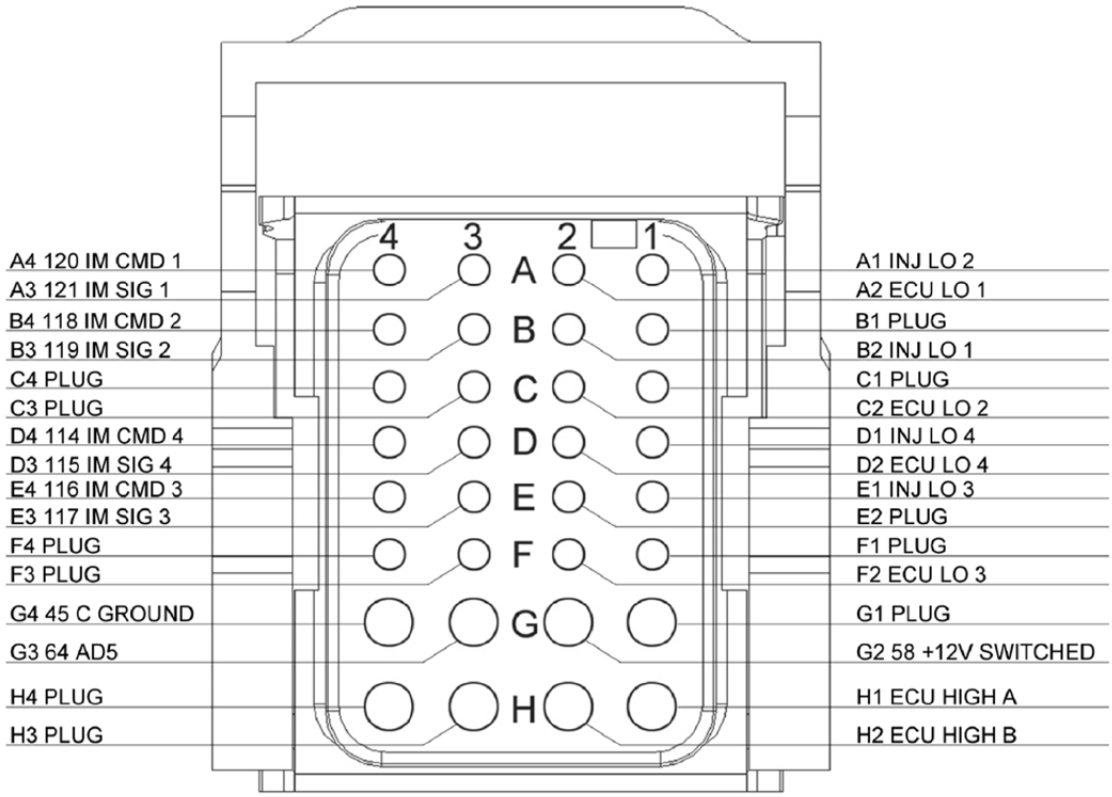


VSI-DI AFC 2.1 81-pin connector pinout / Main Loom

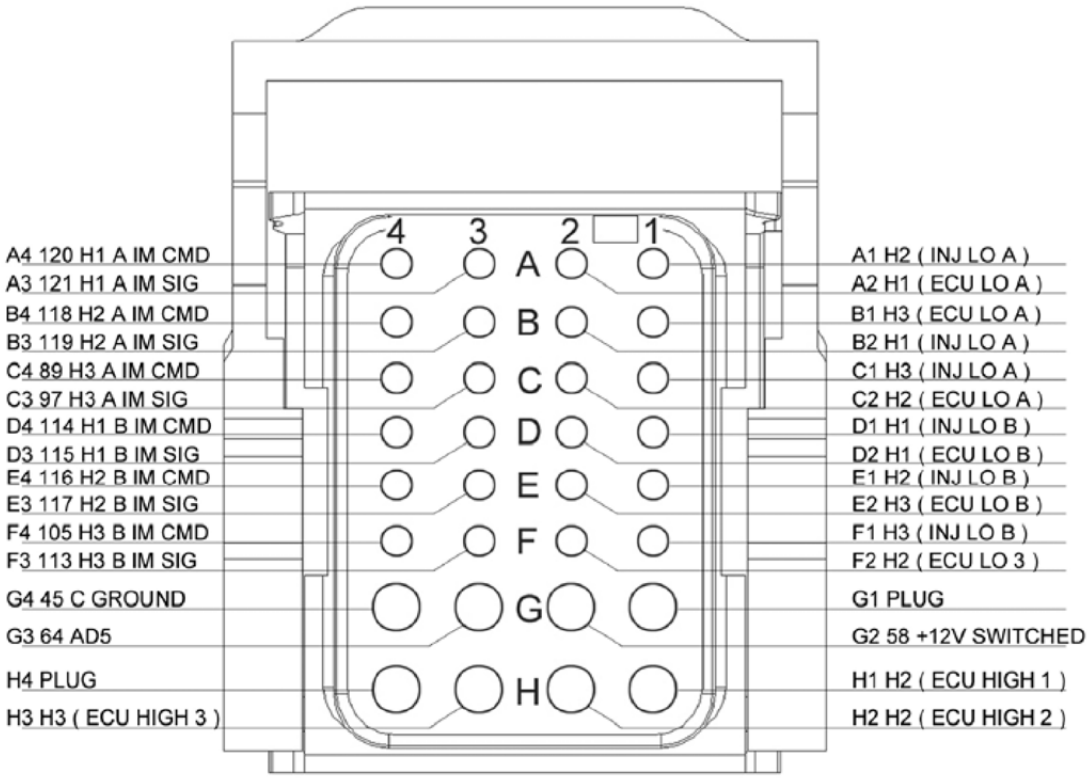




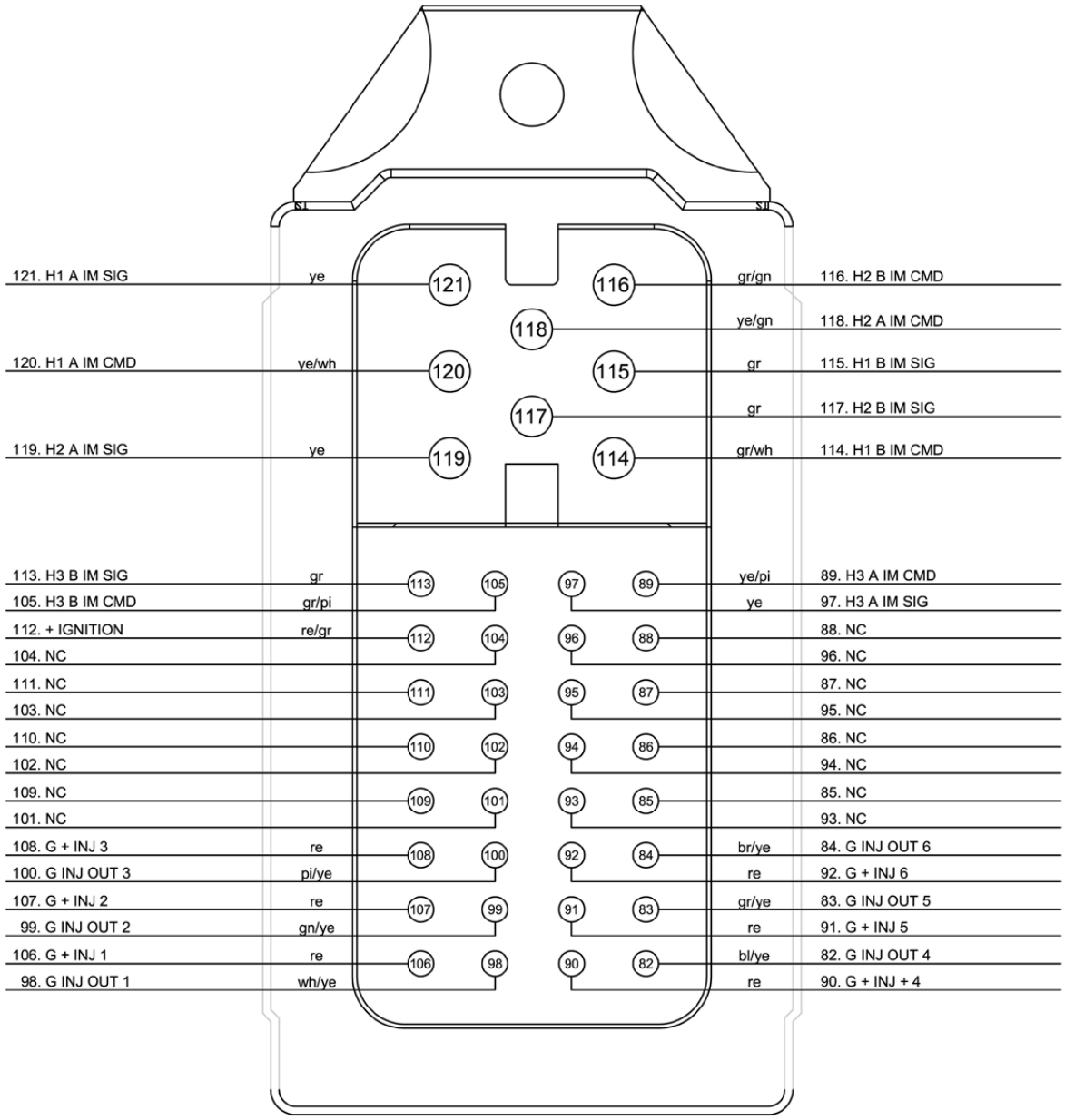
AFC 2.1 VSI-DI
injector connector Y105
4 CYL. LPG/CNG
top view



IM VSI-DI
Injection Module connector
4 CYL. LPG/CNG
top view



IM VSI-DI
Injection Module connector
6 CYL. LPG/CNG
top view



AFC 2.1 VSI-DI
injector connector Y105
6 CYL. LPG/CNG
top view

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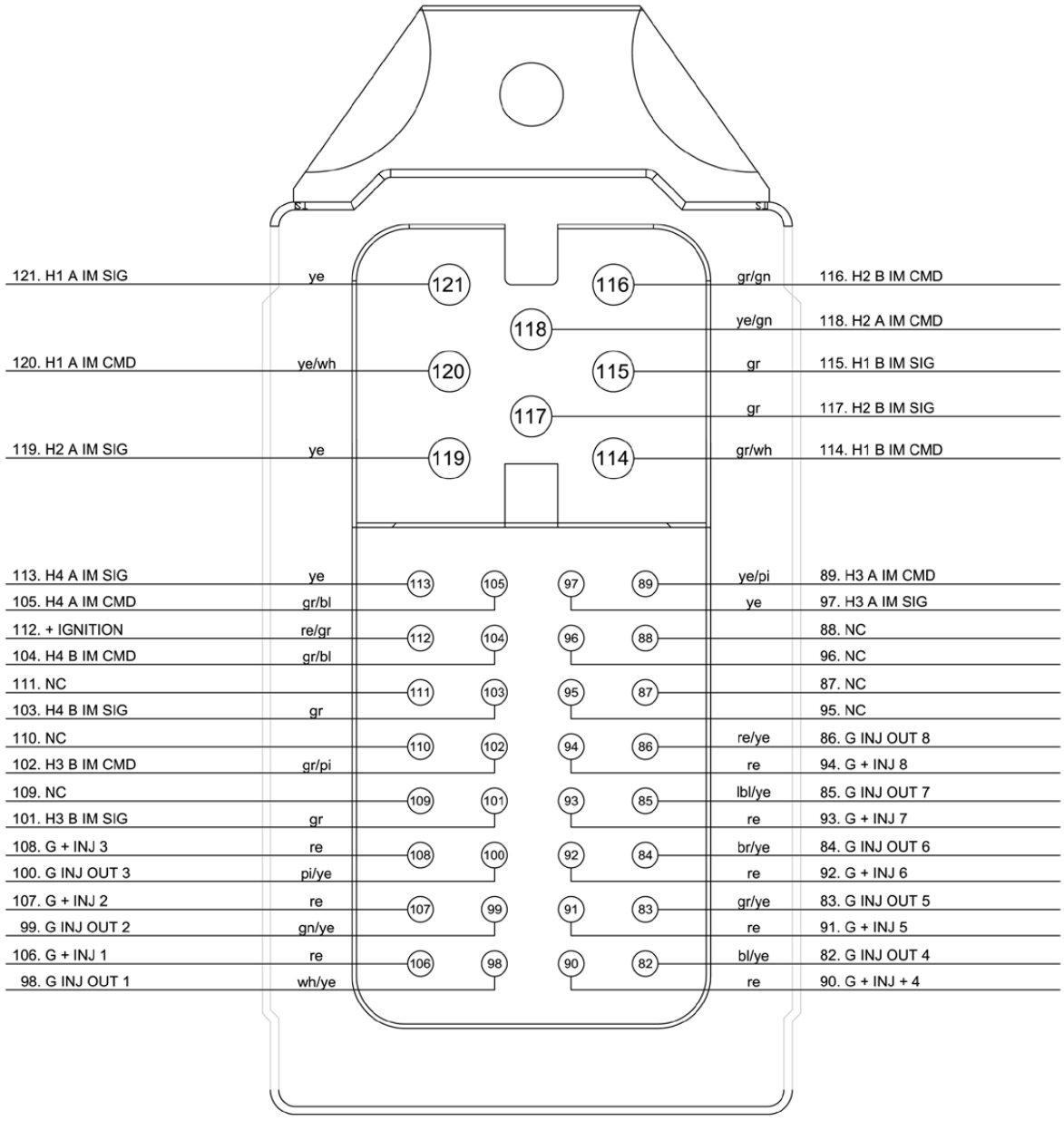


AFC 2.1 VSI-DI
injector connector Y105
8 CYL. LPG/CNG
top view

ALTERNATIVE FUEL SYSTEMS
Prins

- Always disconnect the battery when installing / servicing the LPG system. Make sure the ignition key is out side the car. Be aware of central door locking, radio / telephone memory code and alarm system.
- Do not place the main fuse into the fuse holder before having completed the installation of the system.
- Solder and insulate all electrical connections. Make professional joints using solder and shrink tubing.
  The wires in the loom are provided with numbers and text.
  The text on the wire explains the function of the wire.
  The wire harness is not model specific, therefore is it may be necessary to adjust the length of the wires.
  Ensure maximum care is taken when connecting wiring.
  Do not stretch the wiring harness.
- Never disconnect the AFC connector, unless you have removed the main fuse.

Correctly crimping and insulating a cable eye terminal:

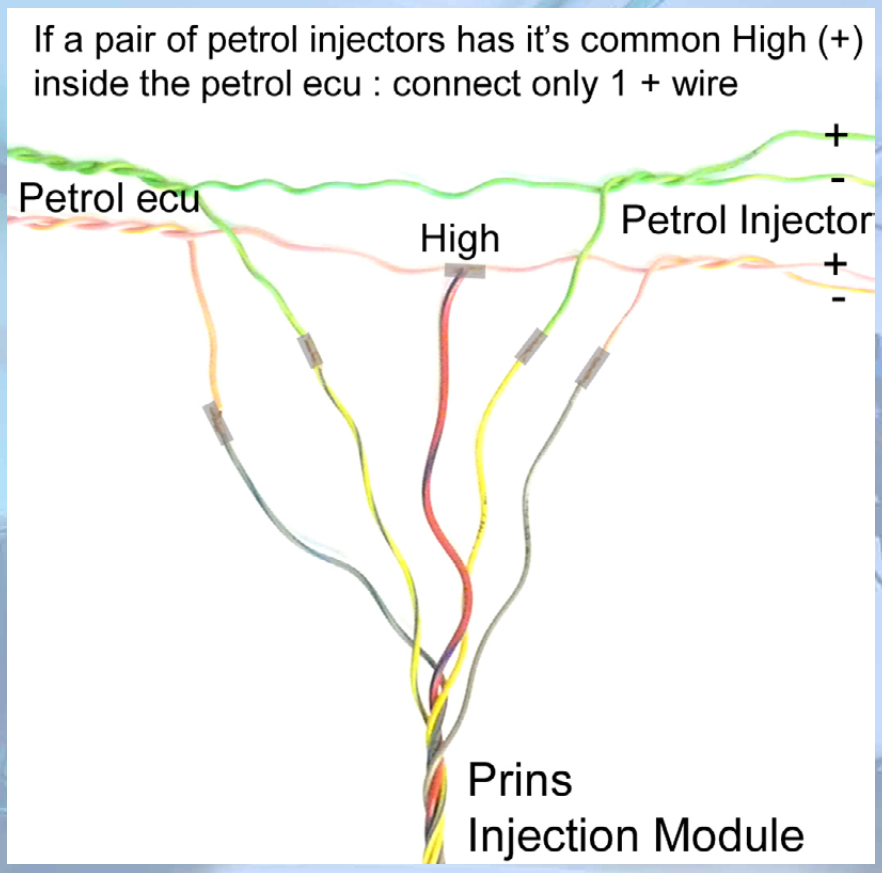
wire stripper

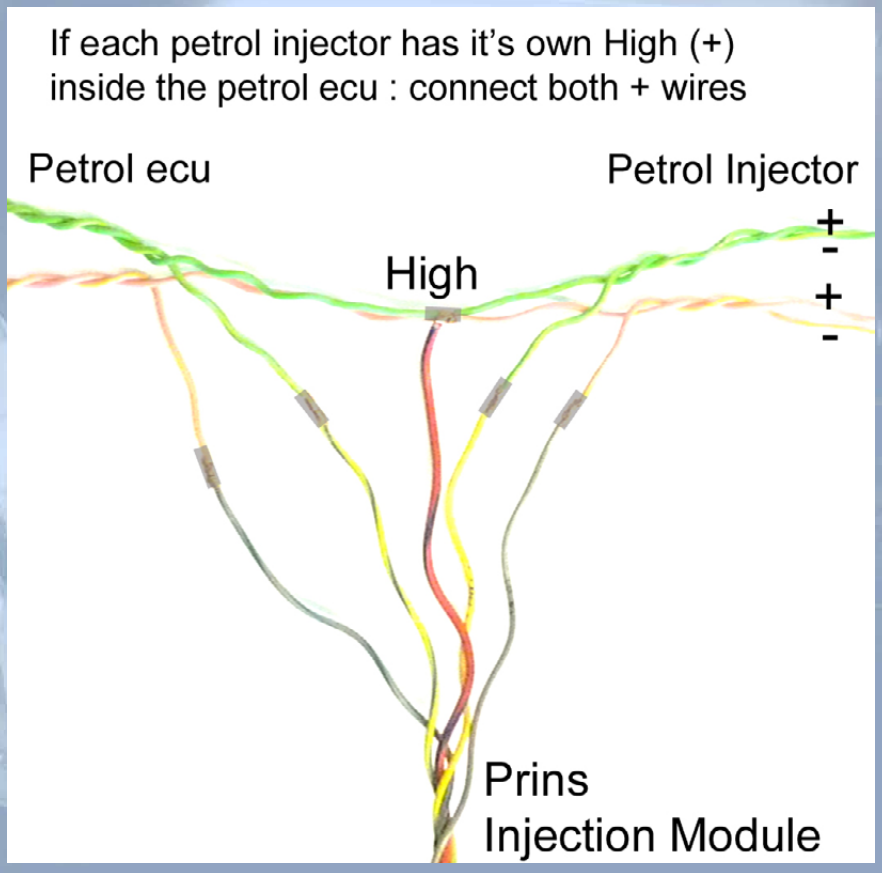
crimping tool

hot air gun

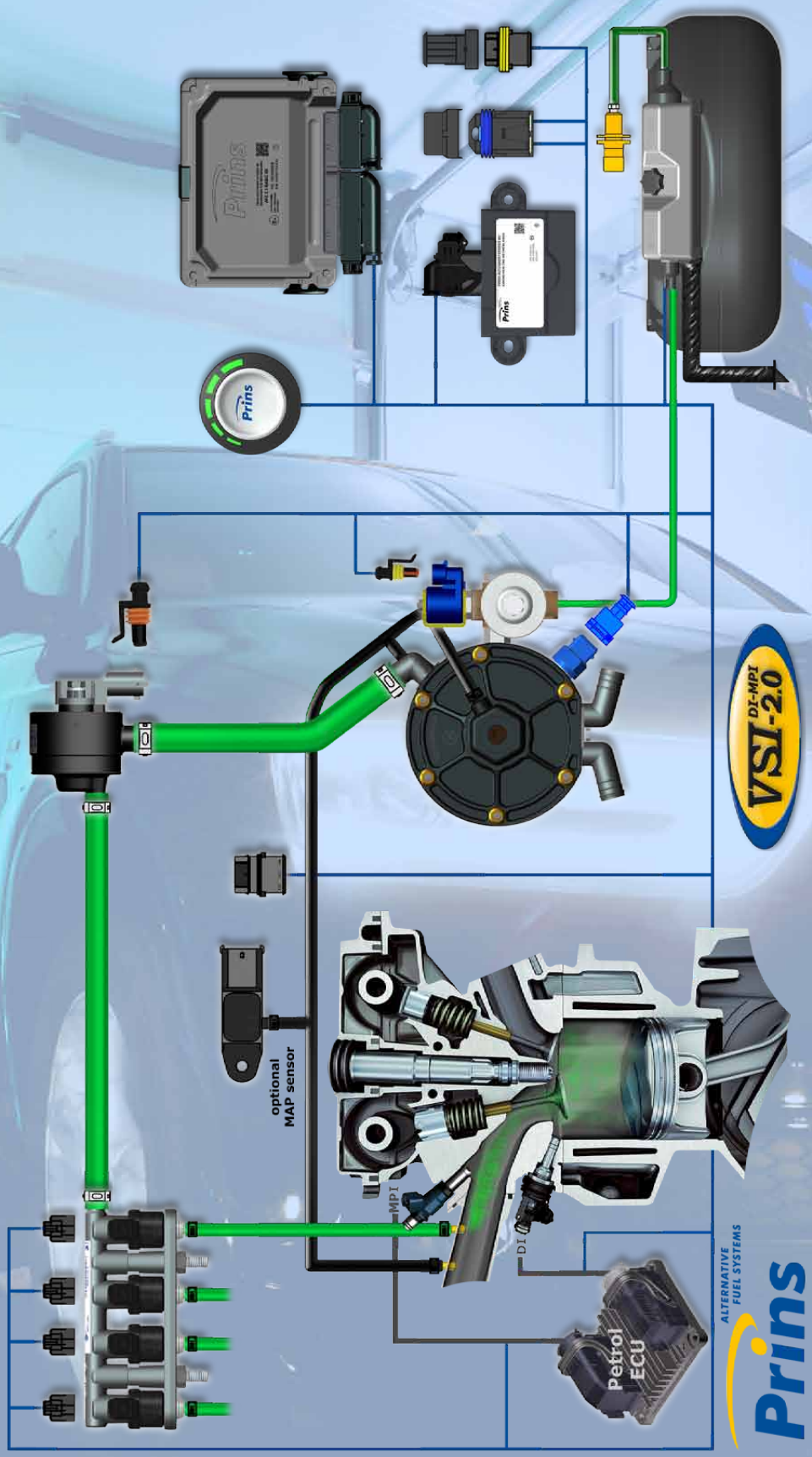
Application:

- Use this application for **battery+ and ground** connections.
- Put the adhesive lined heat shrink tubing over the spot that needs the **water tight** insulation.
- Use a heat gun to shrink the tubing.
- Heat the tubing until glue comes out of both ends.
- Let the tubing cool down until the glue is solidified.
- (information bulletin 254)

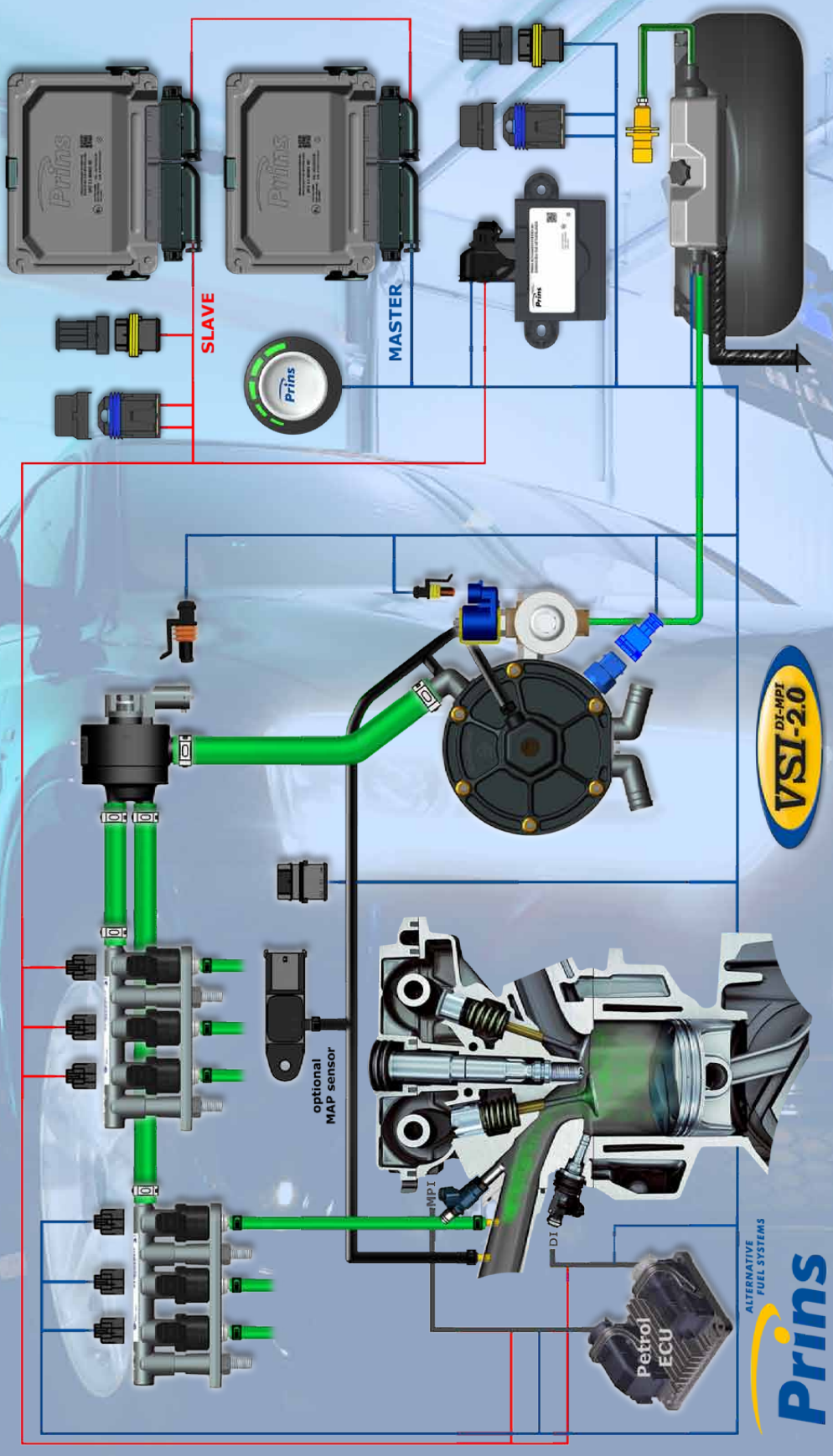




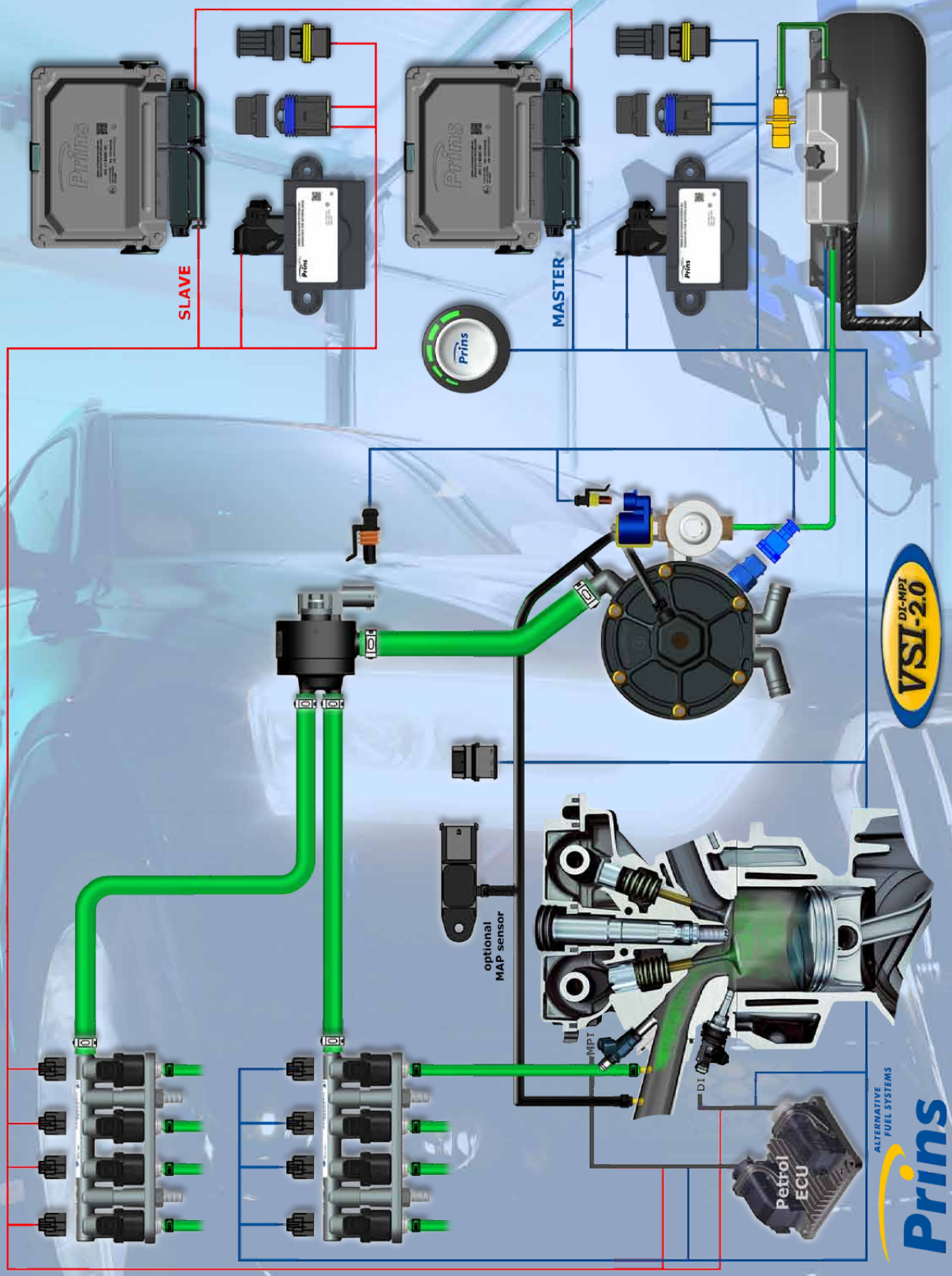
VSI-DI MPI 4-cyl system overview



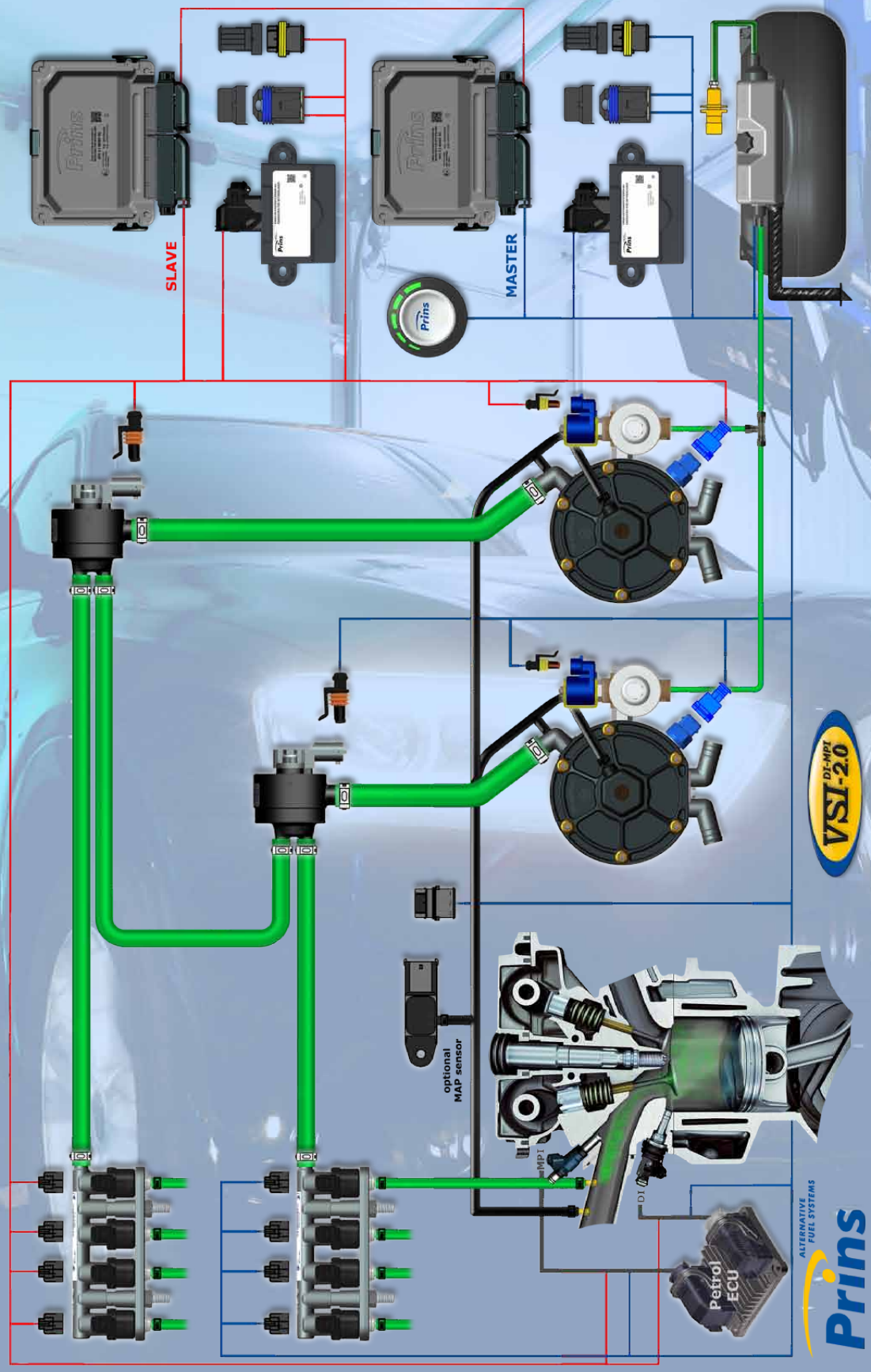
VSI-DI MPI 6-cyl system overview



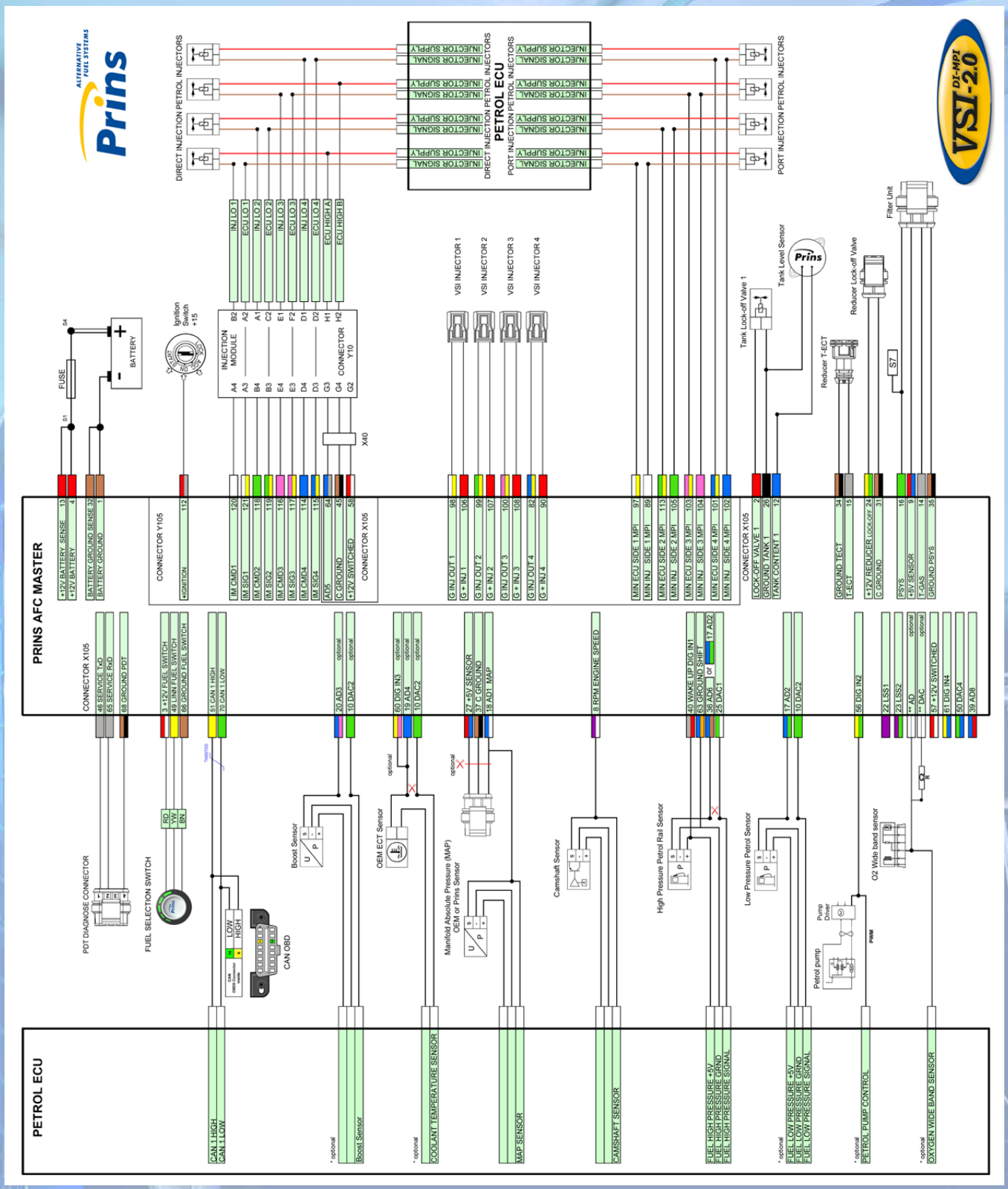
VSI-DI MPI 8-cyl system overview



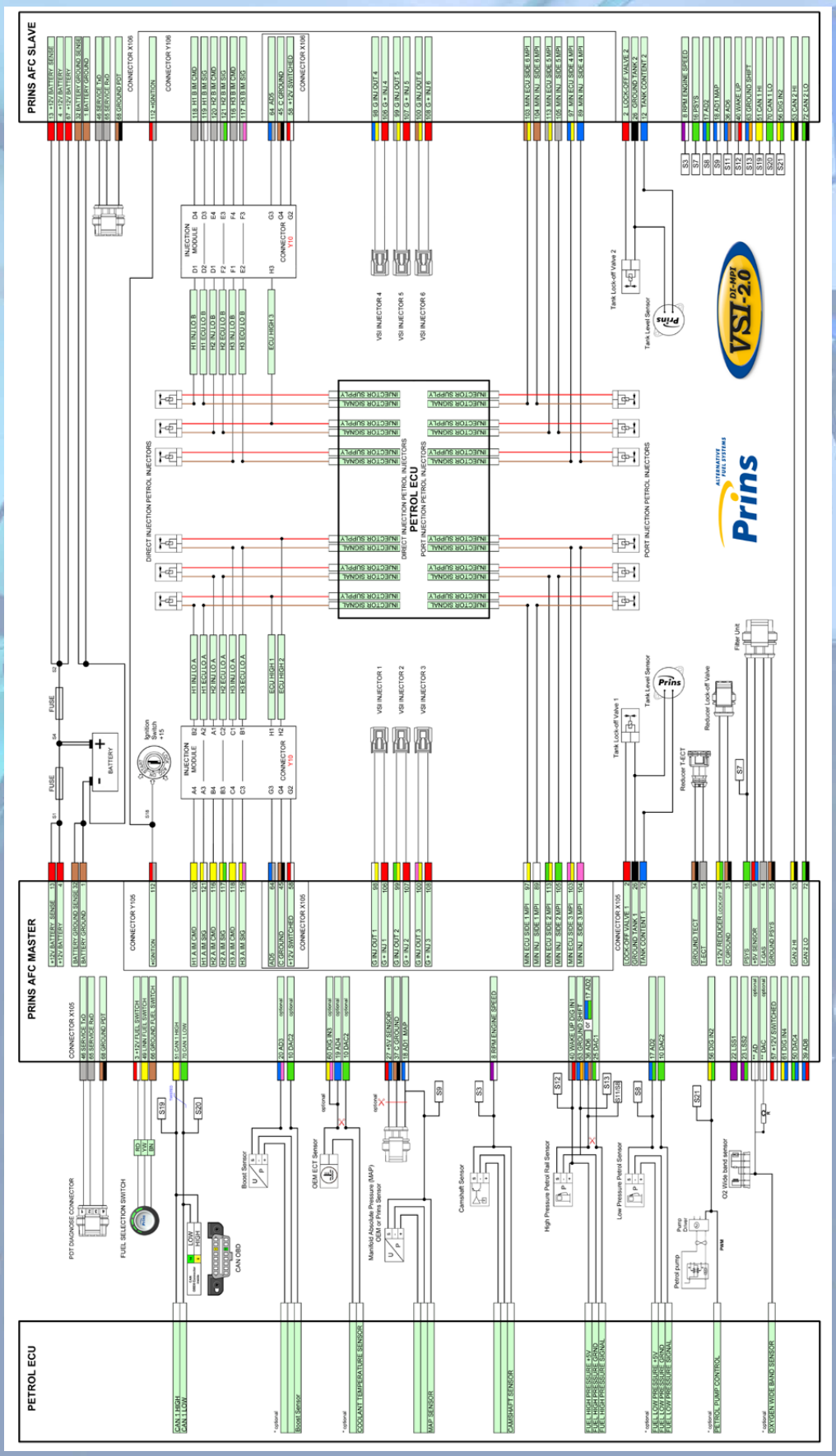
VSI-DI MPI 8-cyl system overview High Power



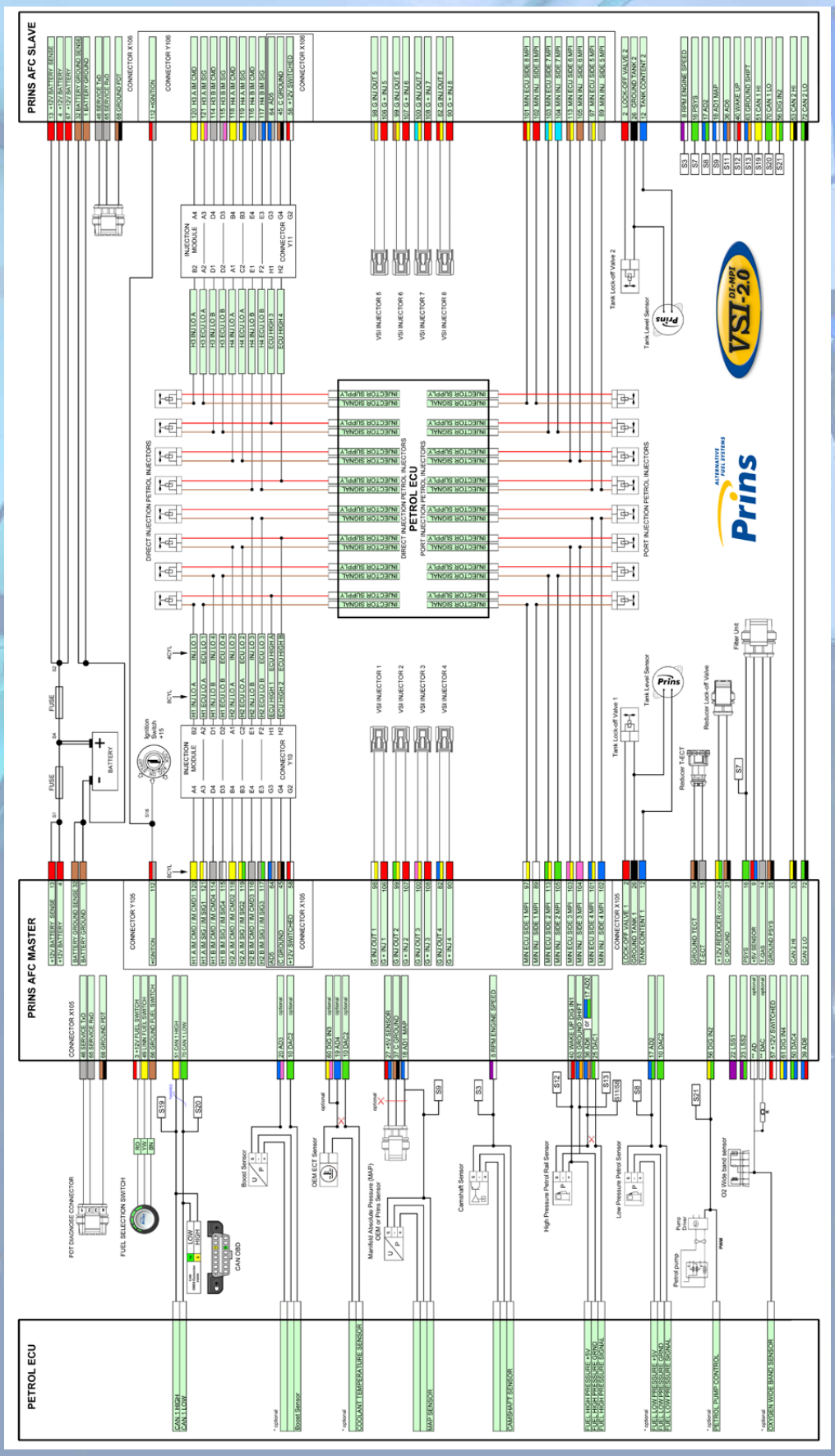
VSI-DI MPI 4-cyl basic wiring diagram



VSI-DI MPI 6-cyl basic wiring diagram



VSI-DI MPI 8-cyl basic wiring diagram



Installation of the LPG container general manual

GENERAL REGULATIONS FITTING A LPG CONTAINER

The requirements of Regulation No. 67-01 series, concerning the fixation of the LPG container(s) shall be deemed to be met if the container is secured to the vehicle by at least:

- The LPG container shall be permanently installed in the vehicle and shall not be installed in the engine compartment.
- The LPG container shall be installed in the correct position, according to the instructions from the container manufacturer.
- The LPG container shall be installed such that there is no metal to metal contact, other than at the permanent fixing points of the container.
- The LPG container shall have permanent fixing points to secure it to the vehicle or the container shall be secured to the vehicle by a container frame and container straps.
- When the vehicle is ready for use the LPG container shall not be less than 200 mm above the road surface, unless:
  the container is adequately protected, at the front and the sides and no part of the container is located lower than this protective vehicle structure.
- No component of the LPG installation shall project beyond the external surface of the vehicle for more than 10 mm.
- No component of the LPG installation shall be located within 100 mm of the exhaust or a similar heat source, unless such components are adequately shielded against heat.
- No component of the LPG installation, except the container, may extend beyond the lower edge of the vehicle unless another part of the vehicle, within a radius of 150 mm, is situated lower.
- If more than one LPG container is connected to a single delivery tube each container shall be fitted with a non-return valve installed downstream of the remotely controlled service valve and a tube pressure relief valve shall be installed in the delivery tube, downstream of the non-return valve. An adequate filter system has to be placed upstream of the non-return valve(s) to prevent fouling of the non-return valve(s).
- The LPG-system shall be installed such that is has the best possible protection against damage, such as damage due to moving vehicle components, collision, grit or due to the loading or unloading of the vehicle or the shifting of those loads.
- All electrical connections shall be soldered and insulated.
- The LPG-system shall show no leaks.
- Certificates containers can be downloaded at www.prinsautogas.com

Installing a cylindrical container

- If the container is secured to the vehicle by a container frame and container straps, the container shall be secured to the container frame by at least two container straps (diagram 1).
- Install the frame with a minimum of four bolts (diagram 1).
- Appropriate washers or plates if the body panels at that location are single thickness (diagram 1).
- If the container straps also carry the mass of the fuel container, at least three container straps are necessary.
- The container straps shall ensure that the fuel container will not slide, rotate or be dislodged.
- A protective material such as felt, leather or plastic shall be interposed between the fuel container and the container straps.
  Locate the tension straps in such a way that the identification stickers remain visible.
- A tension strap has to be in contact with the tank over at least half the tank diameter, with a minimum of 15 centimetres.
- Assuming that the material grade is Fe 370, the fixing bolts shall be of class 8.8, and have the dimensions specified in diagram 1 below:

Container content [litres]	Minimum dimensions of the washers or plates [mm]	Minimum dimensions of the container straps [mm]	Minimum diameter of bolts Class 8.8 [mm]
up to 85	round: 30 x 1.5 round: 25 x 2.5	20 x 3 30 x 1.5	8
85 - 100	round: 30 x 1.5 round: 25 x 2.5	30 x 3 20 x 3 */	10 8 */
100 - 150	round: 50 x 2 round: 30 x 3	50 x 6 50 x 3 **/	12 10 **/
more than 150	shall meet the provisions of Regulation No. 67, 01 series of amendments, for LPG containers, or Regulation No. 110 for CNG containers		

Diagram 1

*/ In this case the container shall be secured by at least three container straps.
**/ In this case the container shall be secured by at least four container straps.

Cylindrical container installed longitudinally

- If the container is installed behind a seat, a total clearance of at least 100 mm, in the longitudinal direction of the vehicle, shall be provided. This clearance may be divided between the container and the rear panel of the vehicle and between the seat and the container (diagram 2).
- If the cylindrical container is installed longitudinally to the vehicle, a transverse connection shall be present at the front of the container frame which is:
  - at least of the same thickness as the container frame
  - at least 30 mm high and its top is at least 30 mm above the bottom of the container
  - as close as possible, or even within, the domed end of the container

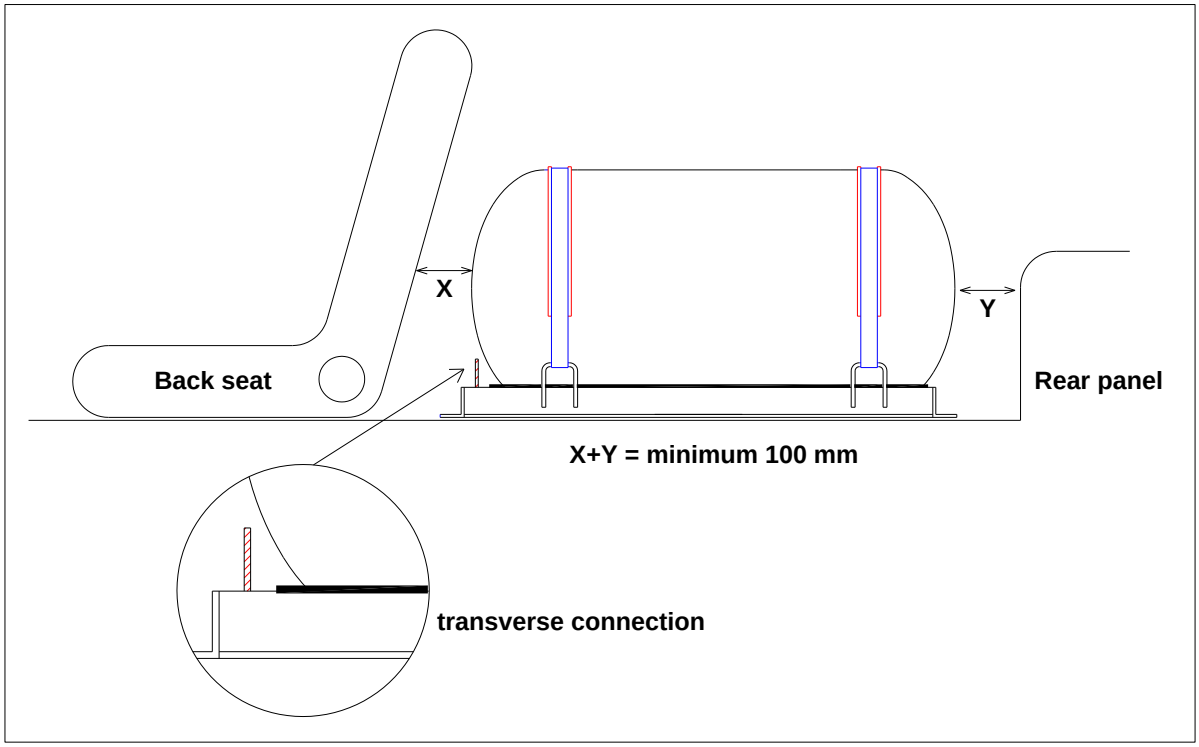


diagram 2

By "installed longitudinally" it is meant that the axis of the cylindrical fuel container makes an angle of no more than 30 degrees with the longitudinal centre plane of the vehicle.

Installing a toroidal container

Container installed into the spare-wheel room (flush-mounted):

- The LPG container shall be installed such that there is no metal to metal contact, other than at the permanent fixing points of the container.
- Installation of the container:
  - with frame or brackets (mounting points on top of the container).
  Frame/bracket material: minimum 4mm thick x 40mm wide.
  Use of Prins M8 certified M8 brackets

(Prins Autogassystemen B.V. declares that the threaded ends, that have been delivered with a toroidal tank, are fitted with a threaded end M8 or M10 with strength class 8.8.)
Other kinds of threaded ends may not be used with these mountings.

- directly to the vehicle floor with bolts and washers / plates
(with tank mounting points on the underside of the container) see diagram 1.

Example of brackets inside the vehicle

Container installed under the vehicle (sub-structure):

- The LPG container shall be installed such that there is no metal to metal contact, other than at the permanent fixing points of the container.
- When the vehicle is ready for use the LPG container shall not be less than 200 mm above the road surface, unless:
- the container is adequately protected, at the front and the sides and no part of the container is located lower than this protective vehicle structure.
- the container is installed in place of the original petrol tank and keeps at least the same height above the road.
- No component of the LPG installation shall be located within 100 mm of the exhaust or a similar heat source, unless such components are adequately shielded against heat.
- Installation of the container:
  - with a frame or brackets (mounting points on top of the container)
  Frame/bracket material: minimum 4mm thick x 40mm wide.
  - directly to the vehicle floor with bolts and washers / plates (mounting points on top of the container) see diagram 1.
- Treat the LPG tank when mounted with a black body coating.

Installing the LPG fuel line and filling unit

- It is not permitted to have LPG tubes routed through the passenger compartment or a closed cargo space.
- Note the jack supporting points and moveable parts when mounting the LPG line.
- Remove the inner burrs after shortening the LPG line (to prevent the flow from being reduced).
- The number of joints shall be limited to a minimum.
- In a passenger compartment or enclosed luggage compartment the gas tube or hose shall be no longer than reasonably required; this provision is fulfilled when the gas tube or hose does not extend further than from the fuel container to the side of vehicle.
- There shall be no gas-conveying connections in the passenger compartment or enclosed luggage compartment with the exception of:
  the connections on the gas-tight housing;
  and the connection between the gas tube or hose and the filling unit if this connection is fitted with a sleeve which is resistant against LPG and any leaking gas will be discharged directly into the atmosphere.
- The filling unit shall be secured against rotation and shall be protected against dirt and water.
- The filling unit is connected to the container by a hose or pipe.
- When the LPG container is installed in the passenger compartment or an enclosed (luggage) compartment, the filling unit shall be located at the outside of the vehicle.

Accessories of the LPG container

Remote controlled valve with excess flow valve on the container

The remotely controlled service valve with excess flow valve shall be installed directly on the fuel container, without any intervening fittings.
The remotely controlled service valve with excess flow valve shall be controlled such that it is automatically closed when the engine is not running, irrespective of the position of the ignition switch, and shall remain closed as long as the engine is not running.

Spring-loaded pressure relief valve in the container
The spring-loaded pressure relief valve shall be installed in the fuel container in such a manner that it is connected to the vapour space and can discharge to the surrounding atmosphere. The spring-loaded pressure relief valve may discharge into the gas-tight housing if that gas-tight housing fulfils the requirements of paragraph

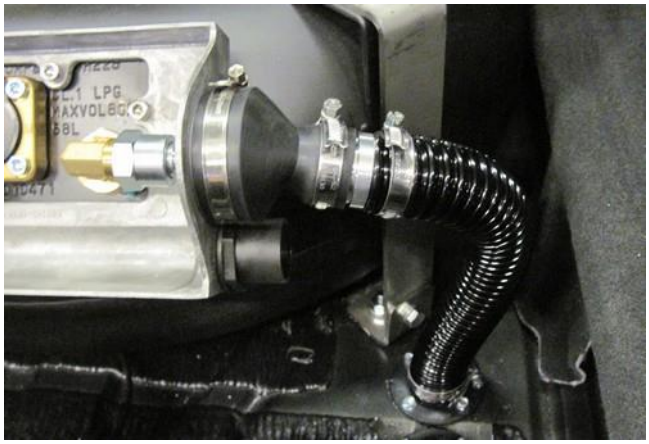
80 % stop valve
The automatic filling level limiter shall be suitable for the fuel container it is fitted to and shall be installed in the appropriate position to ensure that the container cannot be filled to more than 80 per cent.

Level indicator
The level indicator shall be suitable for the fuel container it is fitted to and shall be installed in the appropriate position.

Gas-tight housing on the container
A gas-tight housing over the container fittings shall be fitted to the fuel container, unless the container is installed outside the vehicle and the container fittings are protected against dirt and water.

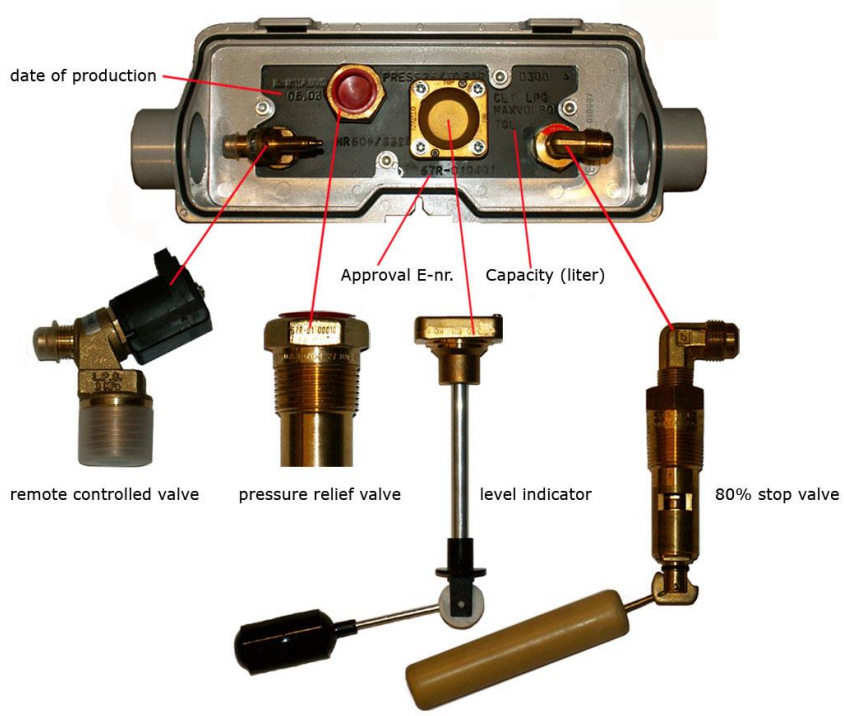
The gas-tight housing shall be in open connection with the atmosphere, where necessary through a connecting hose and a lead-through.

The ventilation opening of the gas-tight housing shall point downwards at the point of exit from the motor vehicle. However, it shall not discharge into a wheel arch, nor shall it be aimed at a heat source such as the exhaust.

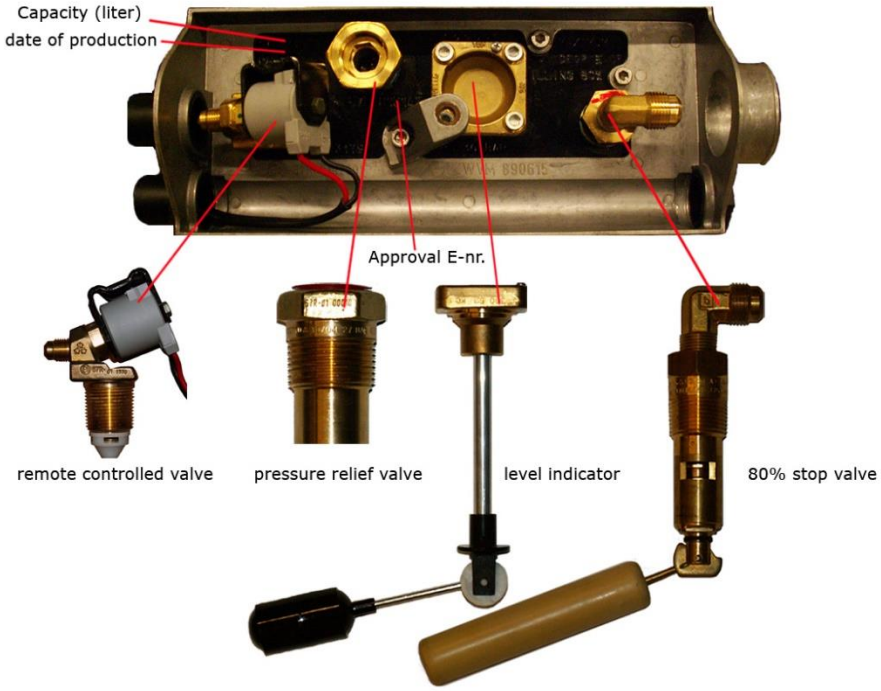


Any connecting hose and lead-through in the bottom of the bodywork of the motor vehicle for ventilation of the gas-tight housing shall have a minimum clear opening of 450 mm^2. If a gas tube, other tube or any electrical wiring is installed in the connecting hose and lead-through, the clear opening shall also be at least 450 mm^2.

Stako container accessories

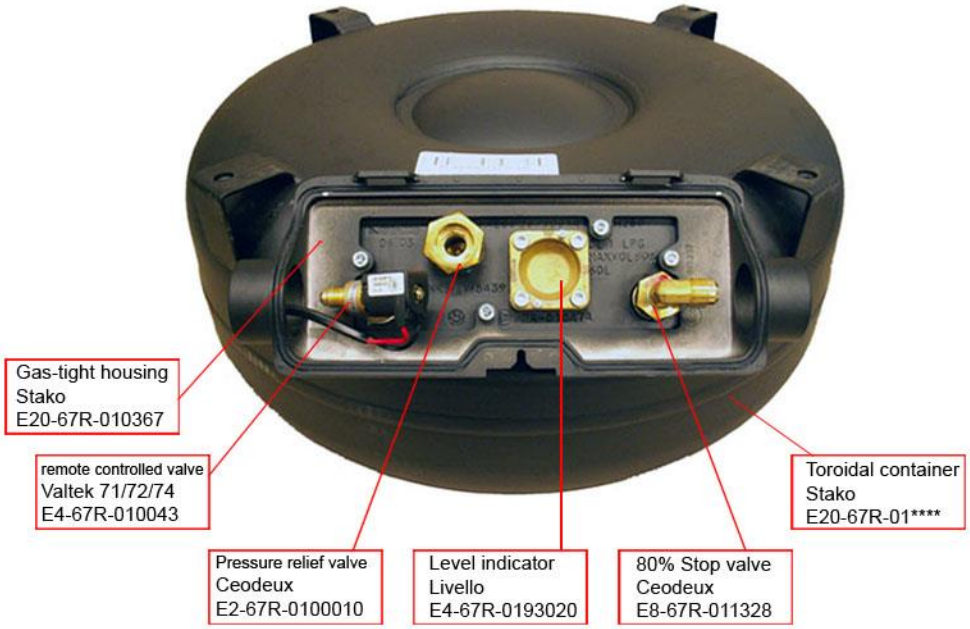


WvM container accessories



Approval numbers Stako toroidal container

Stako toroidal LPG container



Stako Toroidal LPG container E20-67R-01****

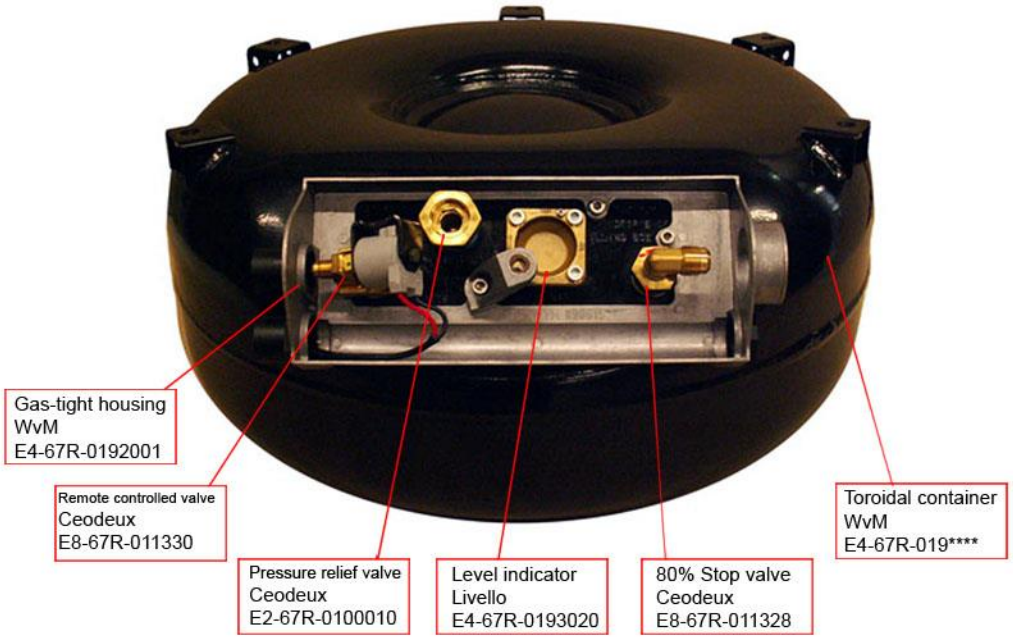
E20-67R-010447 :	54/60 litre	E20-67R-010473 :	67 litre
E20-67R-010466 :	54/60 litre	E20-67R-010475 :	66/72/77 litre
E20-67R-010470 :	51/61 litre	E20-67R-010570 :	66/72/77 litre
E20-67R-010472 :	55 litre	E20-67R-010598 :	86 litre
E20-67R-010474 :	60/66 litre	E20-67R-010599 :	95 litre

Approval numbers Stako cylindrical container

Stako cylindrical LPG container

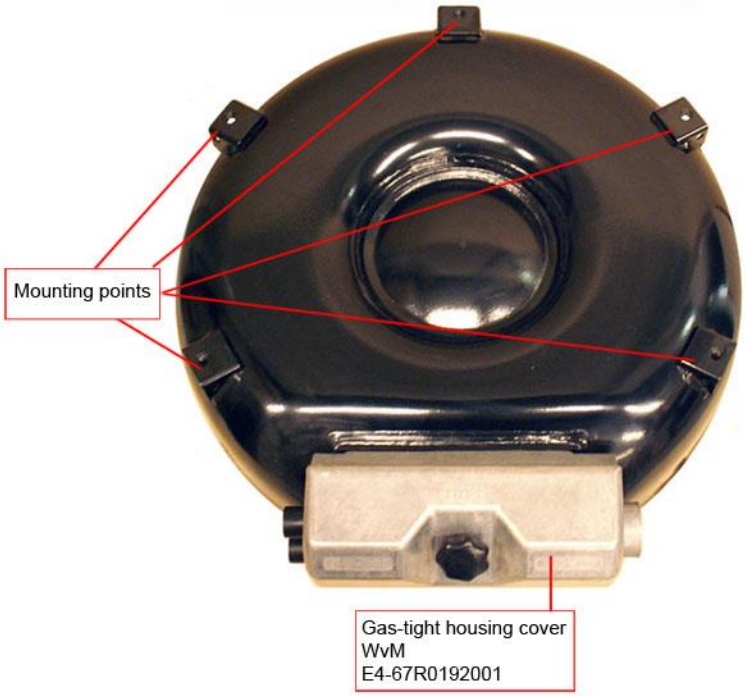
Approval numbers Witte van Moort toroidal container

Witte van Moort toroidal LPG container



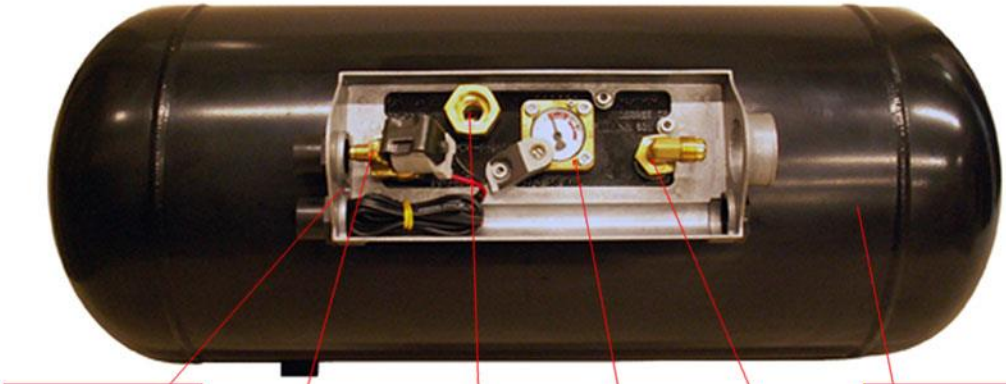
WvM Toroidal LPG container E4-67R-01****

E4-67R-0196007 : height 200 mm
E4-67R-010142 : height 220 mm
E4-67R-010143 : height 230 mm
E4-67R-010145 : height 250 mm
E4-67R-010147 : height 270 mm



Approval numbers Witte van Moort cylindrical container

Witte van Moort cylindrical LPG container



Gas-tight housing
WvM
E4-67R-0192001

Remote controlled valve
Ceodeux
E8-67R-011330

Pressure relief valve
Ceodeux
E2-67R-0100010

Level indicator
Livello
E4-67R-0193020

80% Stop valve
Ceodeux
E8-67R-011328

Cylindrical container
WvM
E4-67R-019****

WvM Cylindrical LPG container E4-67R-01****

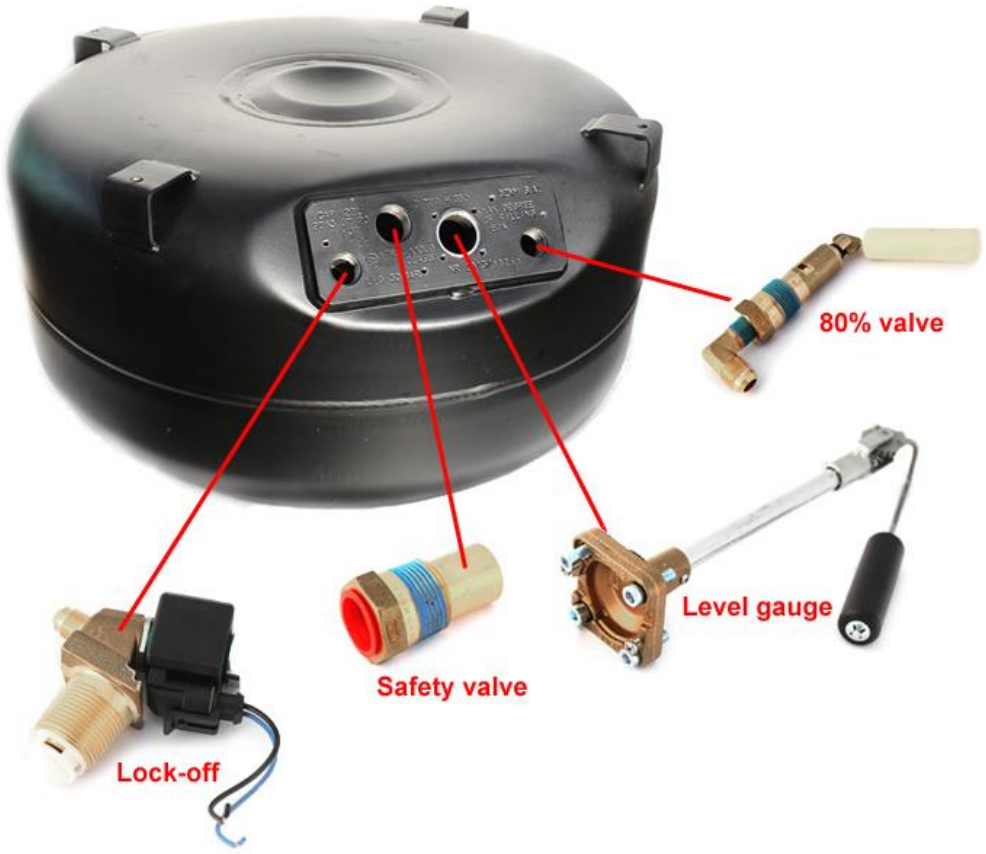
E4-67R-0192002 : diameter 228 mm	E4-67R-010166 : diameter 360 mm
E4-67R-010157 : diameter 270 mm	E4-67R-010170 : diameter 400 mm
E4-67R-010160 : diameter 300 mm	E4-67R-010175 : diameter 450 mm
E4-67R-010162 : diameter 320 mm	

side view

Gas-tight housing cover
WvM
E4-67R0192001

Approval numbers GZWM Toroidal container

GZWM toroidal LPG container



Approval number tank: 122 Liter: E20-67R-011009

Approval numbers tank accessories:		
Lock-off Valve	Ceodeux 071307	E20-67R-010711
	Ceodeux 071307 - option	E8-67R-011330
	Valtek 74 - option	E4-67R-010043
	OMB B3 - option	E8-67R-014449
Safety Valve	Ceodeux 070770	E2-67R-0100010
Level Gauge	Shramifa (Livello) L1	E4-67R-0193020
	SRG (497 serie) - option	E4-67R-010038
80% Valve	Ceodex 070116	E8-67R-011328
	OMB Type 4B - option	E8-67R-010216

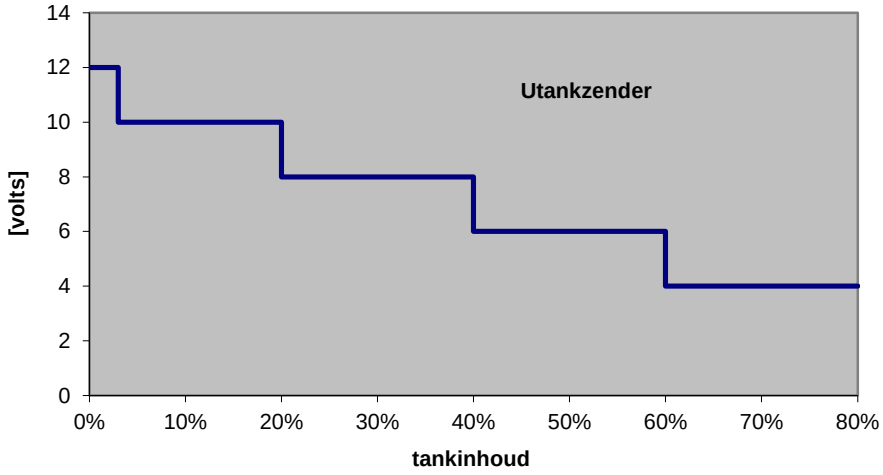
Approval numbers (optional) gas tight housing:	
GZWM OP-280	E20-67R-010711
Del Al Type D – option	E4-67R-010103

Tank coupler

This unit is specially designed and tested according R67R-01 (chapter 17.5) test procedures to connect multiple tanks.

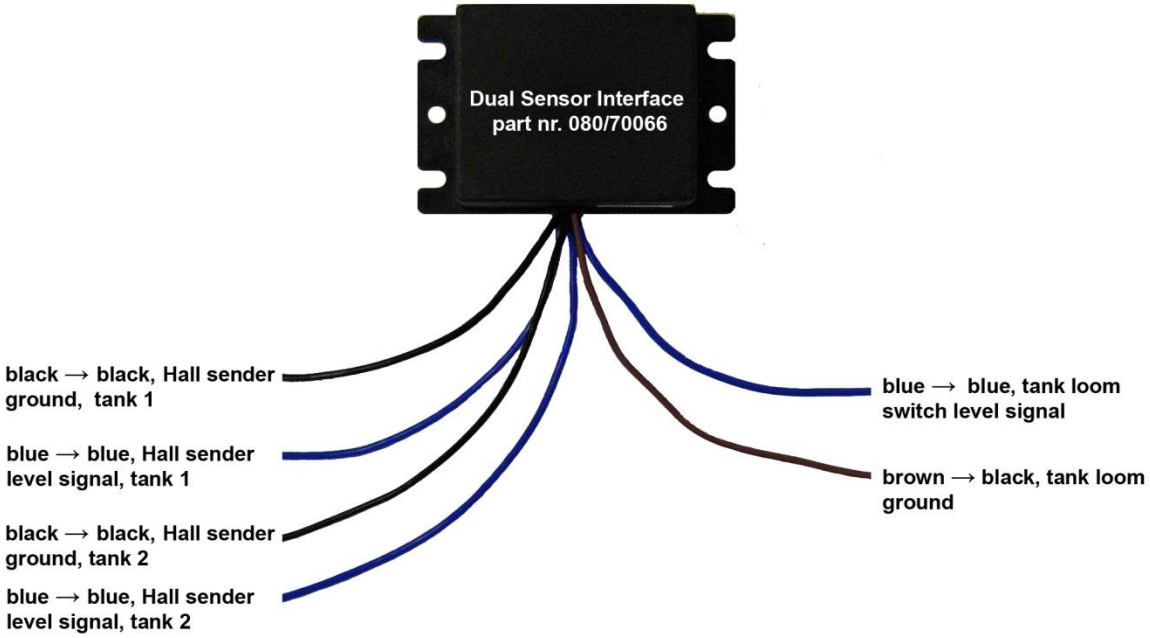
Hall sender

The fuel level in the reservoir is measured by a hall sensor mounted to the reservoir. This sensor informs the computer on the actual reservoir level, in five voltage levels. Switching from the one to the other level results in hysteresis. This implies that at the transition between 40 and 60% of the level, the 60% LED will extinguish as soon as the reservoir level is measured lower than 40% for some time. In this way, changes in indication when driving through a curve (fuel level at the position of sensor becomes lower temporarily) are prevented.
Refer to the diagram for the relation between the reservoir level and reservoir level sensor voltage generated by the reservoir level hall sensor.



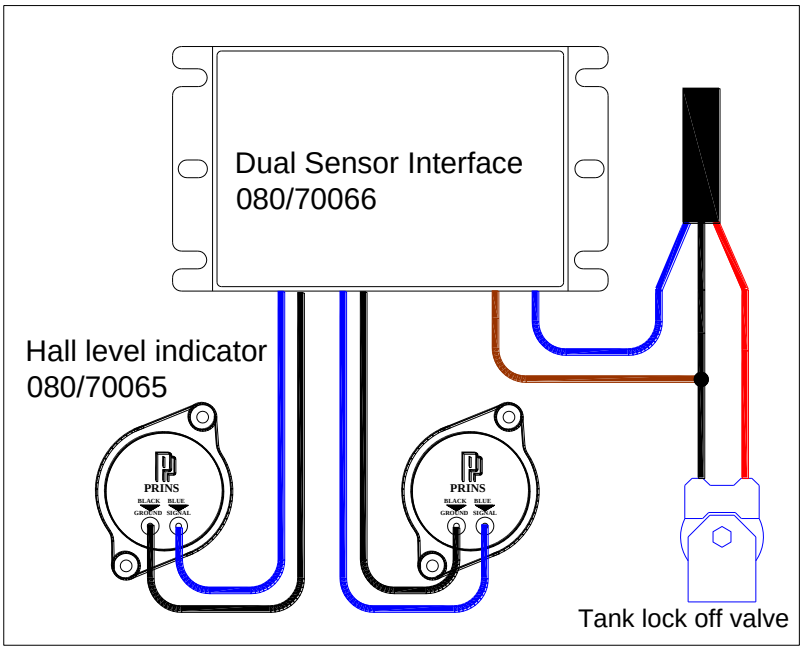
Hall tank sender
part nr. 080/70065

Dual sensor interface



Connect the interface wiring according to drawing, all blue and black wires are exchangeable since they are internally connected.

The DSI makes it possible to connect two level sensors to one lpg switch.
The DSI will always show the highest lpg level on the switch.



Filling Units

The filling unit shall be secured against rotation and shall be protected against dirt and water.

When the LPG container is installed in the passenger compartment or an enclosed (luggage) compartment, the filling unit shall be located at the outside of the vehicle.

The filling unit shall be equipped with at least one soft-seated non-return valve, and it shall not be dismountable by design.

The filling unit shall be protected against contamination.

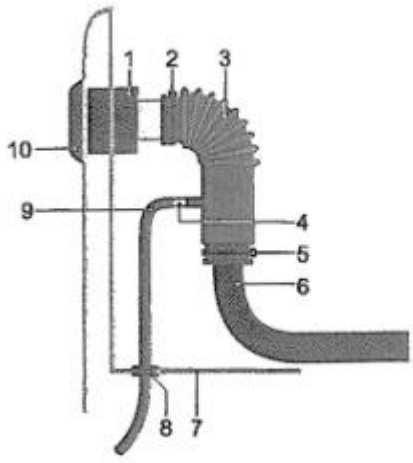
The outside filling unit is connected to the container by a rubber hose, XD hose or copper pipe.

There shall be no gas-conveying connections in the passenger compartment or enclosed luggage compartment with the exception of:
(i) the connections on the gas-tight housing; and
(ii) the connection between the gas tube or hose and the filling unit if this connection is fitted with a **sleeve** which is resistant against LPG and any leaking gas will be discharged directly into the atmosphere.

EN **The purpose of the rubber sleeve is to get rid of eventual leaking gas**

1	Filler housing	6	Filler hose
2	Cable tie	7	Bodywork
3	Rubber sleeve	8	Grommet in hole Ø14
4	Hose adaptor	9	Hose
5	Cable tie	10	External filler

- Slide the rubber sleeve over the filler hose
- Assemble the filler hose at the external filler
- Drill a hole Ø14mm in the area of the external filler and fit the grommet inside
- Slide the hose covering over the filler coupling
- Assemble the 4mm hose with the hose adapter
- Bring the hose to size and feed it through the grommet
- Use the Ø30mm grommet as an inspection gap in the covering panel. To make sure the connections can be checked easely (for in case the filler housing is assembled behind a difficult to remove panel)



Bayonet filling unit angled connection

Bayonet filling unit straight connection

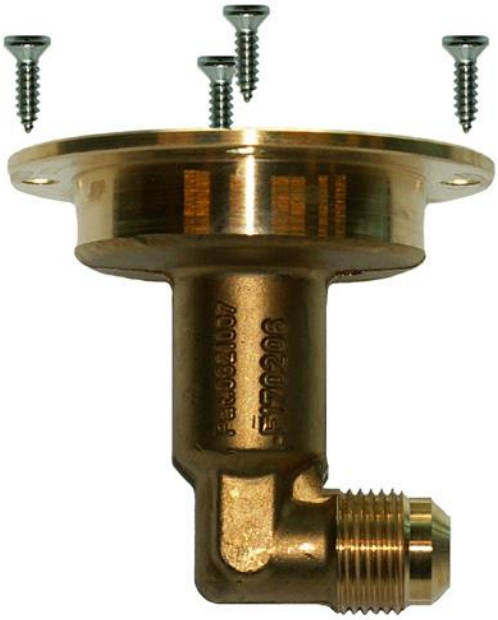
Euro filling unit straight connection

Filler nozzle
Ceodeux
E8-67R-011329
BE/DE/UK/IE/LU/PL/CH

Euro filling unit angled connection

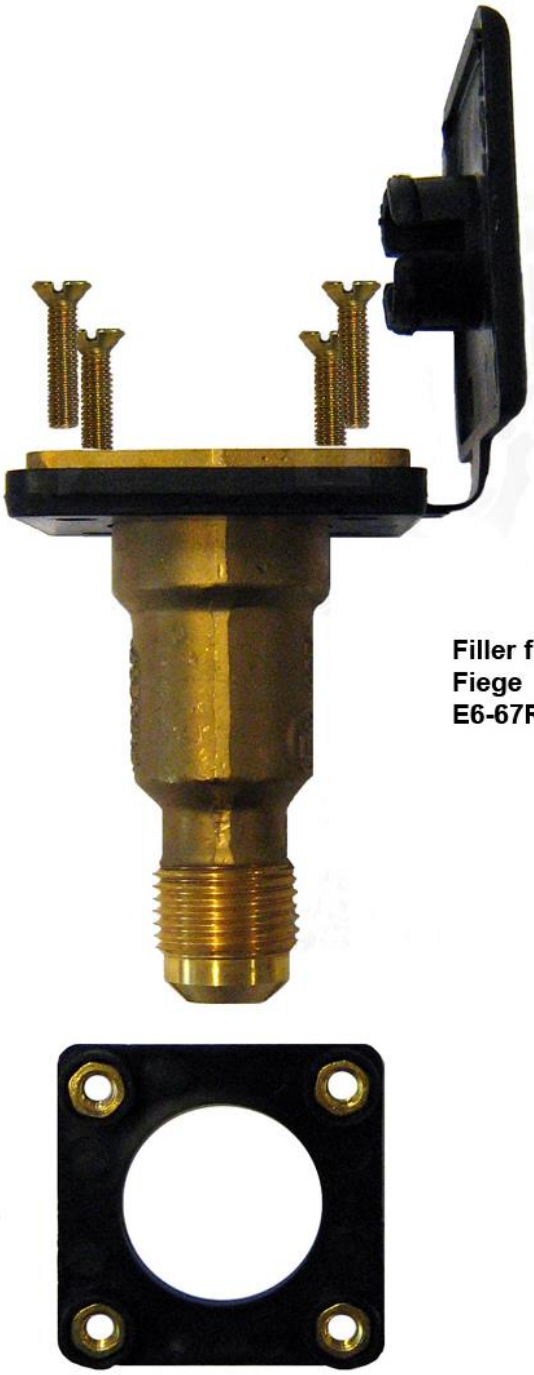
Filler nozzle
Ceodeux
E8-67R-011329
BE/DE/UK/IE/LU/PL/CH

Italian filling unit



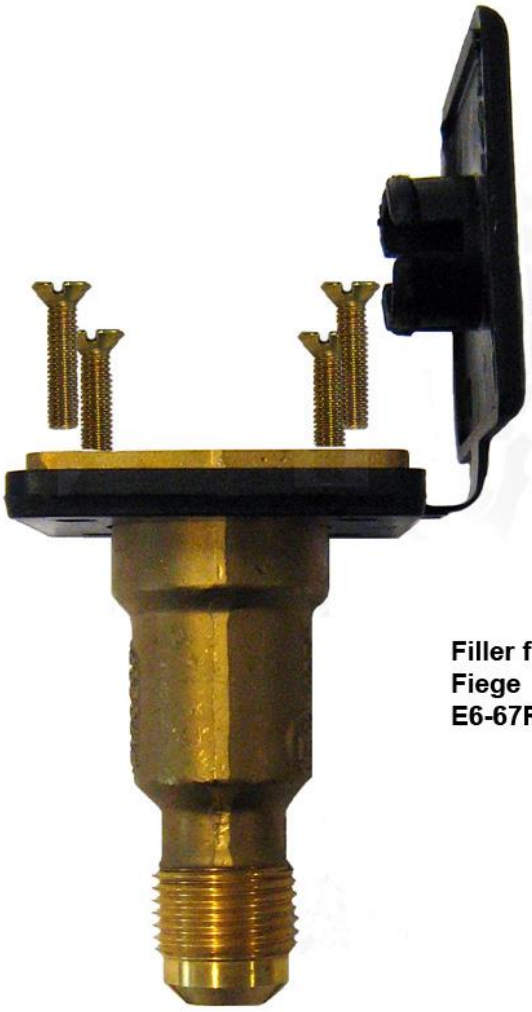
Filler nozzle
Fiege
E4-67R-0196011
DK/FR/EL/HU/IT/NO
AT/PT/SK/CZ/TR/SE/CH

Flat filler straight connection

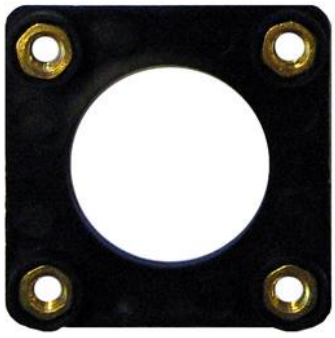


Filler flat straight
Fiege
E6-67R-010023

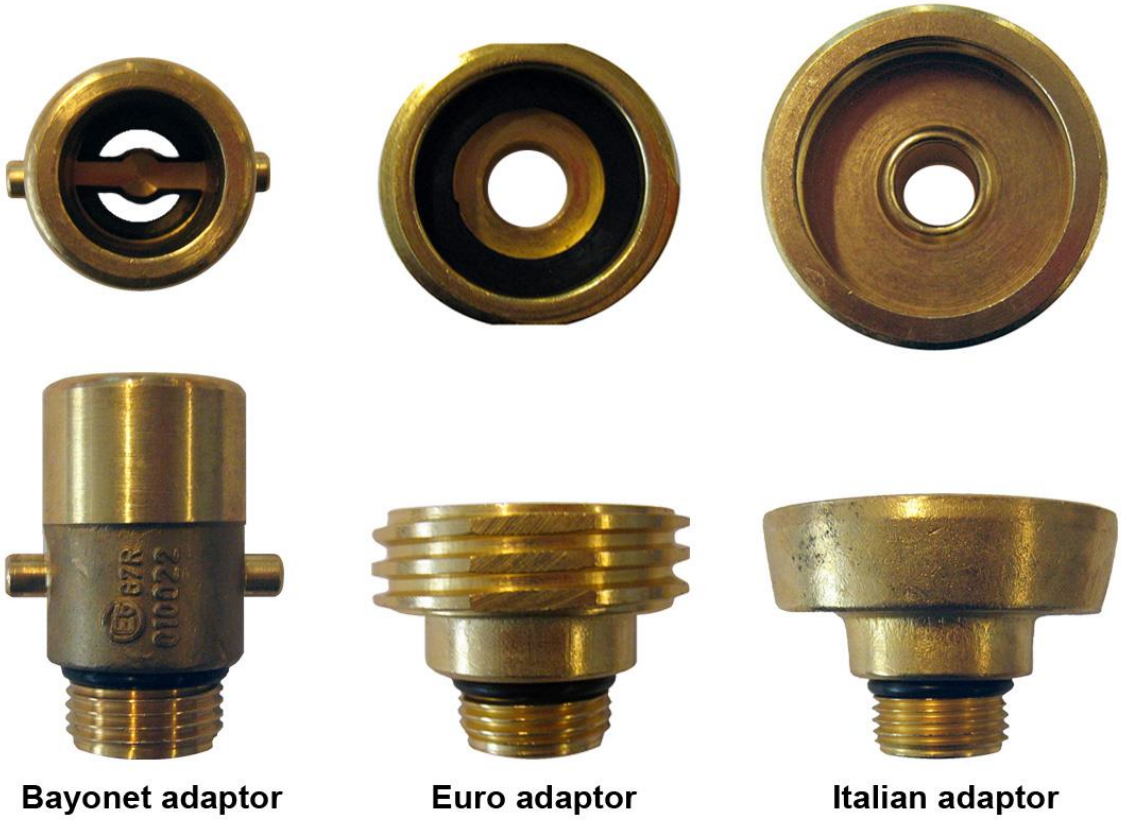
Flat filler angled connection



Filler flat straight
Fiege
E6-67R-010023



Flat filler adaptors W21.8



Bayonet adaptor | Euro adaptor | Italian adaptor

Mini filler

Approval number E13-67R-010300
Ceodeux

Filling hose rubber

Fuel supply hose XD-3 / XD-4 / XD-5

XD Approval number E4-67R-010247

Minimum bending radius:
50mm XD-3 / 85mm XD-4
105mm XD-5 / 120mm XD-6
60mm XD-500-3

Filling hose XD

XD Approval number E4-67R-010247

Minimum bending radius: 120mm XD-6